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THE MENTAL CAPACITY OF THE AMERICAN NEGRO

BY

MARION J. MAYO

Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy, under the Faculty of Philosophy, in Columbia University

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Reprinted from the Archives of Psychology, No. 28.

NEW YORK CITY
NOVEMBER, 1913

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THE MENTAL CAPACITY OF THE AMERICAN NEGRO

CHAPTER I

The Measurement of Racial Mental Differences

The numerous groups of men that people the earth present to us far from a homogeneous picture. Long before the dawn of history there was to be found on the several continents a multiplicity of physical types, languages, manners, customs, and states of social development. These various differences among men have ever constituted an interesting and fruitful field for scientific and speculative enquiry.

Students of the human species have with great diligence described in minuteness of detail the physical characteristics of the various races and tribes of men; and the existence among them of intellectual, moral, and temperamental differences is a matter of common observation among historians and anthropologists. Institutions, arts, laws, beliefs, customs, and other direct manifestations of the mental life have presented quite as striking variations among peoples as have their physical attributes of form, feature, and color. General estimates of these mental differences may be found scattered widely through the pages of history and science. To treat of the mental capacities and traits of men has always been considered within the scope of anthropology; while recent developments of psychology have so enlarged its province as to make the comparative study of the mental activities of different human groups a legitimate field of psychological enquiry. Numerous attempts have already been made to describe and explain the differences and liknesses in the minds and characters of the various peoples.

It has always been regarded as quite obvious that, in point of view of mental capacity, some races stood distinctly higher than others. Civilized man, surrounded by his self-made resources of comfort and power, could hardly escape the feeling of superiority when looking upon his savage neighbor in squalor and need. It was very natural to refer differences in economic status and social development to differences in mental ability and to corresponding differences in the capacity of peoples for achievement and progress. Civilized man has ever regarded uncivilized man as inferior. Among Europeans and their descendants in all parts of the globe there has always existed a feeling of the superiority of the white race. It is a feeling

"bred in the bone," and so strong that it can hardly be eradicated. The feeling is probably due in a large measure to the leadership which the white race has borne in civilization. But it would be wrong to suppose that this feeling is peculiar to the white race. A sense of superiority is also shared, and in an equal or even greater measure, by other races, especially where the influence of some alien people has not become predominant, or strikingly forceful, among them. Oriental peoples are said to regard Western nations with "a contempt in comparison with which our contempt for them is feeble."

How then, we may well ask, are we to ascertain the relative worth of races? What methods of measurement are to be employed in determining their comparative mental endowment? It must be said that for the most part the estimates that have been hitherto made have been based upon observations gained from practical experience in dealing with the races. As an example of the use of the observation method of comparing the mental worth of races, we quote as follows from a recent volume by Professor Ross: "To forty-three men who, as educators, missionaries, and diplomats, have had good opportunity to learn the 'feel' of the Chinese mind, I put the question, 'Do you find the intellectual capacity of the yellow race equal to that of the white race?' All but five answered 'yes,' and one sinologue of varied experience as missionary, university president, and legation adviser, left me gasping with the statement, 'Most of us who have spent twenty-five years or more out here come to feel that the yellow race is the normal human type, while the white race is a 'sport.'"[1] An estimate of this sort is based solely upon observation and practical experience, and the reports of different observers are likely to show great discrepancies. As Deniker points out: "Each traveller, each observer, tends to judge in his own way a given people according to the nature of the relations (pacific, hostile, etc.) which he has had with it."[2] Hence while such estimates may be admitted to have a certain rough validity, they still belong to the domain of opinion, and can never have the scientific value that attaches to comparisons based upon actual measurements.

Underlying the whole discussion of comparative mental differences there has until recently been the tacit assumption that those races most advanced in civilization were superior races. The assumption of superiority was based upon the degree of attainment in the arts and sciences of civilized life. Peoples of culture were peoples of superior mental worth. Such an assumption was both natural and plausible. Even bodily form and features came to be

[1] "The Changing Chinese," p. 61.

[2] "The Races of Men," p. 121.

regarded as a stamp of racial nobility. The physical traits of civilized races thus came to be considered marks of superior racial worth; while those of savage peoples were regarded as marks of racial inferiority. Purely external characteristics have thus often come to be employed as criteria of relative mental capacity and worth.

It is true that the physical differences between the races are so striking as almost to obscure their far more fundamental likenesses. There are considerable racial variations in weight and stature, in the shape and size of the head, in the length, abundance, and texture of the hair, in the pigmentation of the skin and eyes, and in the relative dimensions of the various parts of the body. White Europeans have always regarded their type as ideal—or at least as the most nearly perfect human type—and they have not hesitated to consider wide departures therefrom as evidence of inferiority. Thus the orthognathism of the Caucasian has been believed to be an essentially human trait, while the prognathism of the Negro has been regarded as giving him an animal expression, and as approximating him in type to the ape. His long arms and receding forehead were said to be simian traits, and have been looked upon as evidences of racial inferiority.

First of all, then, as an objective standard, differences in physique, and especially in physiognomy, have been regarded as sufficient ground to infer differences in mental ability, and to justify a classification of races as lower and higher. Camper first advanced the theory that an increase in the facial angle may be taken as a sign of superior intelligence. Figguier says: "A relatively exact judgment may be formed from the size of this angle as to the value of a race from the intellectual point of view."[3] Brinton may be quoted to the same effect regarding the physical criteria of racial mental inequality: "We are accustomed familiarly to speak of higher and lower races, and we are justified in this even from merely physical considerations. These indeed bear intimate relation to mental capacity, and where the body presents many points of arrested or retarded development, we may be sure that the mind will also."[4]

An obvious fault of this mode of argument is the assumption of an ideal or superior physical type, endowed by nature with a higher order of intelligence. In the first place, such a type, if there be one, should not be naively assumed, but scientifically determined. It would be necessary to know that a certain physical type is characterized by a distinct measure of mental superiority. It would be necessary to establish a definite and fixed correlation between physi-

[3] "Human Race," p. 506.

[4] "Races and Peoples," p. 47.

cal and mental traits, before any legitimate inference could proceed from physical features to mental estimates. Hence any attempt at the arrangement of races in an order of mental ability which is based upon mere differences in physical features, without such well-established mental correlations, can give no final results. A more promising physical criterion of the mental capacity of races was found in the development of craniometry. This, with its measurement of skull form and capacity, and of cranial weight, was believed to offer a scientific means of determining the order of races in mental ability. Especially would this seem to afford evidence quite conclusive of the matter when supplemented by cranial anatomy, with favorable or unfavorable modifications in the complexity of cerebral structure.

Modern science has shown that the brain is the most important physical organ in determining the hierarchy of animal forms and in establishing the superiority and dignity of man. The human brain has indeed attained to an extraordinary development, a fact of the highest and most far-reaching significance in the life order of the world. We assume that the remarkable influence played by consciousness in the evolution of the human species has been associated with, and dependent upon, this organ. Hence it was that as scientific methods and interests developed, students turned with expectancy and zeal to a study of the human nervous system as a basis for a comparison of the mental capacity of the races. The determination of the comparative size and form of the skull, and the comparative weight and structure of the brain, has constituted one of the most interesting and important investigations of modern anthropology. The cephalic indices, cranial capacities and brain weights of all races were sought with enthusiasm, with the result that racial differences were found to be considerable. These differences have been made the basis of many speculations regarding the intellectual capacities of different races. But nothing that seems final has resulted therefrom. A full consideration of the facts as they have thus far been recorded seems to establish no reliable correlation—certainly none in individual cases—between intellectual pre-eminence and either the shape of the skull or the size of the brain.

Craniology and anthropological studies in general have therefore failed thus far to give any very definite quantitative knowledge regarding the mental differences of races. On this subject Deniker says: "We are unable to affirm anything when we have once made up our minds to escape from the commonplace generalities that savages are wanting in foresight and general ideas, that they are cruel, that their imitative faculties are highly developed, etc."[5]

[5] "The Races of Man," p. 121.

Yet it is an accepted postulate of modern physiological psychology that cerebral activity underlies and conditions psychical activity. And the character of cerebral activity is of course dependent upon cerebral structure. If then our knowledge of the anatomy of the brain were sufficiently refined, we might be able to discover the key to differences in race psychology, and find ample ground for an inference of real differences in mental capacity. But we are far from that at present. Our knowledge of the morphology of the brain is yet too meager for us to know anything of great value as to what racial differences actually are in the minute but highly refined structures on which the mental life may be supposed to depend. Until physiological psychology shall have completed its work, we shall probably not be able, from a comparative study of the brain, to make out either a proof or an estimate of mental differences among the races of men.

But will the criterion of the comparative achievement of the races in civilization serve to measure their relative mental ability? Are those peoples who have developed art, science, and invention, and have gained such a mastery over man and over the forces of nature, to be judged as in any way superior in actual mental endowment to peoples who have remained hitherto in a primitive state? The presumption may be in their favor, but it is not conclusive. Environment, opportunity, external circumstance, outward stimulus, play such a part in the development of men and nations, that only after a most thorough trying-out could any one feel sure of a judgment as to what are, or what are not, the possibilities of a people. Achievement in civilization can not be considered a sufficient test of capacity for civilization. History shows such achievement as a criterion of race capacity, or race superiority, to be untenable. The Chinese were civilized long before the peoples of Europe. Within the course of a few generations ancient Athens passed from a state of barbarism to a state of culture that has in many respects never been surpassed. The proud Roman looked with contempt upon the barbarous Germans roaming over the plains and through the forests of Central Europe. Yet from these wild hunters and fishermen of the time of Tacitus have come the leaders and promoters of modern civilization. The Germans were at that time an undeveloped people. Nevertheless they have shown that they were capable of the highest development. We can not therefore say that because a people is uncivilized, it can not attain to civilization. We must distinguish between the attainments and the possibilities of a people. The progress of the Japanese in the last half century, their capacity not only to imitate and absorb the civilization developed by other nations, but

to keep their own counsel and to do things in their own way, has been such as would cause any careful student of race problems to hesitate to set them down now as being only an "average" people.

It must be evident that ultimately we have no way of judging of the capacity of individuals or races except by what they can do. Achievement must be the final measure of capacity. Capacity, however, must be tested under favorable conditions. It may indeed create a presumption against a people's aptitude for civilization that they have lived from time immemorial with little or no independent progress; but until the matter is subjected to reasonable test under favorable circumstances, we can not fix boundaries to the progress to which that people may attain. If they have lived hitherto without progress under a certain set of circumstances, we are not in a position to infer that they are incapable of progress, even equal to that of the most advanced nations, under circumstances more favorable.

We have seen that we can not rightly infer a difference in the mental capacity of races from differences in physical characteristics; that the size or shape of the head can not be taken as an index of intellectual ability; and that the culture of a race at a given time can not be regarded as a measure of its capabilities for advancement. The measuring of racial differences in mental traits is evidently a complex and difficult problem. Nor do these differences now appear so striking or obvious as they were formerly supposed to be. There is indeed a strong tendency among students of racial problems to regard the races, not only as not having been proved unequal in mental endowment, but as being, so far as mental inheritance is concerned, upon a basis of substantial equality. In discussing this problem, G. Spiller says: "We are under the necessity of concluding that an impartial investigation would be inclined to look upon the various important peoples of the world as to all intents and purposes, essentially equal in intellect, enterprise, morality, and physique."[6] In a comparative study of races, Jean Finot says: "The conclusion forces itself upon us that there are no inferior and superior races, but only races and peoples living outside or within the influence of culture. The appearance of civilization and its evolution among certain white peoples and within a certain geographical latitude is only the effect of circumstances."[7] It must be said, however, that these are but instances of an expression of opinion contrary to that which is ordinarily received. They are by no means statements of carefully tested knowledge.

[6] "Papers on Inter-Racial Problems," p. 35.
[7] "Race Prejudice," p. 308.

The estimates hitherto made of racial differences in mental traits have always proceeded upon a very slender basis of relevant and carefully ascertained fact. It seems necessary to find some new method of attack before any satisfactory solution of the problem can be made. We should, if possible, find some way of making actual mental measurements, and base our study and estimate of mental differences between races on the facts thus obtained. There seem to be two reliable sources of such quantitative data: first, the direct measurement of mental traits by means of carefully devised mental tests; and, secondly, the comparison of the relative attainment and efficiency of different racial groups in the same kind of mental work, wherever such work is performed under like conditions, and is measured by the same standard, or by such standards as are easily reducible to a common measure.

Little effort has until recently been made to work out and apply exact and reliable methods for mental measurements and the quantitative determination of mental differences. Some advance has now been made in this direction by the aid of experimental psychology. Series of mental tests have been formulated for measuring mental development and capacity, but the intricacy of the quantitative study of psychic phenomena makes progress in this field of investigation slow. The matter of devising satisfactory mental tests is far from being simple or easy; and the application of a test once devised is of great practical difficulty, especially in the case of alien peoples whose language, habits, manners, and customs are widely different from our own. The understanding of the test, the control of attention, and the introspection of the subjects tested, are all sources of doubt and error. Satisfactory introspection in uncivilized subjects is very difficult to obtain. Though it still be far off in achievement, a direct measurement of mental phenomena seems to offer the most hopeful means of a final solution of the problem of racial differences in mental traits. A movement was fairly begun in this direction when the Cambridge Anthropological Society sent out an expedition in 1898 to study in a scientific manner the mental life of the inhabitants of the Torres Straits. "For the first time trained experimental psychologists investigated by means of an adequate laboratory equipment a people in a low stage of culture under their ordinary conditions of life. The foundations of ethnical experimental psychology were thus laid."[8] With the results of this expedition and a few similar studies, we have what may be called the beginnings of a new era in race psychology.

[8] Alfred C. Haddon, "History of Anthropology," p. 104.

The measurements so far made have been in the main of psychophysical processes. The tests have served to dispel many formerly widespread errors and exaggerations as to the acuity of the senses of primitive peoples. The extraordinary power of sight which savage tribes are reputed to possess seems to be due more to the training and experience incident to their modes of life than to native visual acuity. The same may be said of their power to perceive and interpret sound. "The general conclusion which may be drawn from the available evidence is that pure sense-acuity is much the same in all races, . . . and that the frequent superiority of the savage over civilized man in his recognition of what is going on around him in nature is due to his trained powers of observation, powers usually limited in scope, but very highly developed in special directions."[9]

When we come to measure and compare the higher psychical functions of individuals or races the problem is at once vastly more difficult. No completely satisfactory tests have yet been devised for measuring the higher mental processes. Yet the most substantial and convincing work in the determination of the relative mental capacity of races will, in all probability, come chiefly from a direct measurement on a large scale of mental capacity by the methods of experimental psychology. The devising of a satisfactory series of mental tests, and of methods for so standardizing the conditions of the tests as to make results reasonably comparable, is a problem of extraordinary difficulty, but hardly one that will baffle the painstaking spirit and subtile ingenuity of modern research. Our methods of conducting such investigations, though still defective and inadequate, are being improved and enlarged; and our results, despite the complexity and elusiveness of the facts to be studied, will gradually attain to requisite accuracy and reliability. In this way it is confidently to be expected that racial differences in mental traits will eventually submit themselves to exact description and measurement.

The second method above mentioned of obtaining quantitative mental measurements which may be used for a comparative study of the mental ability of racial groups is more dependent upon circumstances; but on account of the large number of measurements that are sometimes readily accessible, it may, with comparatively little labor, lead to results quite as important and reliable as those obtained by mental tests. If two racial groups in considerable numbers are engaged in like mental work, and if the conditions under which the work is done are practically the same, then, if we can determine the amount of work done by each group we may regard this as a measure

[9] W. H. Rivers, "Observation on the Senses of the Todas," *British Journal of Psychology*, December, 1905.

of its capacity for the work. The work done is a function of the capacity applied, and varies directly therewith. Hence a measure of the amount of work performed by a group under these conditions may be regarded as a measure of the group's capacity for this work. Material for this sort of investigation may be found in all educational institutions in which the student-body is made up of different racial groups. Anthropologists have not failed to note the value of this source of measurement in estimating and testing racial capacity. The marks of teachers made for determining the relative standing of pupils, their monthly progress, and their fitness for promotion, furnish quantitative data for comparative study. We have availed ourselves of such data in connection with the high schools of the City of New York for determining the relative scholastic ability of white and colored pupils. The pupils of each group are here pursuing the same kind of work; this work is measured at frequent intervals by the same standards; and measurements of the work actually done by each pupil are indicated by the teachers' marks. By a statistical treatment of these marks we have determined the comparative scholarship of the white and the colored pupils, which, under the existing conditions, may be regarded as also an index of their relative scholastic ability. Such investigation should contribute something of definite value, not only to educational theory and practise, but also to the study of the comparative psychology of races.

It may be pointed out here that the conclusions derived from this study are, for the most part, coincident with views that have long been of general acceptance. They differ widely from these views, however, in the way in which they have been obtained. It is the method of their derivation which gives chief value to these conclusions. They are more definite and more reliable than mere observations or opinions could ever be. They are based upon numerical data—upon measured facts. It is true that these measurements were made for a different purpose than the one here employed. But this does not detract from their value or reliability, as the practical end which they were designed to meet necessitated as great accuracy and care in their determination as could be obtained by the rather crude methods of measuring mental attainments which are still in general use.

CHAPTER II

Data and Methods

The precise problem whose solution is attempted in this study is a determination by a comparison of school marks of the relative efficiency in scholarship of the white and colored pupils in the high schools of the City of New York. Working under as nearly identical conditions as are anywhere existent, pursuing the same branches of study, being measured by the same standards of scholarship, and having previously received like elementary and grammar school training, it is obvious that a valuable opportunity is here afforded for a comparative study of these two groups of pupils, and for the ascertainment of whatever differences in scholastic ability there may exist between them. It seems safe to infer under these circumstances, where opportunities for improvement have been so largely identical, that any marked differences that may appear between the groups are to be attributed, in the main at least, to the influence of race heredity rather than to that of the physical or social environment. The main advantage of the study lies in the fact that the cases considered have been freed to a very great extent from disturbing external influences so that such differences as appear may be legitimately attributed to original differences in mental constitution.

The fundamental interest in the study has been to find out the differences in mental capacity between the two groups so far as this capacity is exercised in school work. While the quantity actually measured in the data presented is scholastic efficiency, we assume that, when considered in the aggregate, there is a close correspondence between scholastic efficiency and intellectual capacity, so that the measure of one may at the same time be regarded as a measure of the other. A direct measurement of mental capacity is obviously out of the question. But the results are not to be regarded with less confidence on this account; for indirect measurements are of common use in physical as well as in mental science.

Mental efficiency then being a function of mental ability, we assume that, in work so largely intellectual as that required for the pursuit of the studies of our secondary educational curricula, a difference in scholastic standing is due in the long run to a difference in general mental ability. We have sought to determine by an extensive study of the work actually done in the high school what this dif-

ference in standing is. It ought to be of value to find out just what per cent. of a group of colored pupils, under such conditions as prevail in the high schools of the City of New York, will reach the mean or average attainment of a group of white pupils in any subject of study. Such information, if reliably determined, may be of service to the educator and publicist, and should be of interest to the student of psychology and anthropology.

The study is based upon a statistical treatment of school marks. We are aware that there may be misgivings regarding the reliability of conclusions derived from investigations based on such data. The significance, or lack of significance, of school marks, and their arbitrary and unscientific character, are often subjects of comment and unfavorable criticism. It must be admitted that most of the objections that can be made against the unreliability of school marks in general apply in the case of the marks here considered. Still we insist that a school mark is not a fancy but a real measure of the pupil's ability; and, if carefully made out, it gives a decidedly more reliable determination of the pupil's intellectual capacity than would a mere impression or guess. Of course school marks are intended to meet the practical needs of instruction and educational administration, and have no relation in themselves to the interests or demands of science.

Just what do we mean by a school mark? The ratings of teachers are generally made out quite definitely, as 60, 75, 90. As ordinarily used, numbers like these are obtained in the first place, either from counting individual objects, or from applying to some quantity a definite unit of measurement. But certainly no process of counting is made use of by the teacher in obtaining his ratings; and obviously he has no definite unit of measurement with which to determine a pupil's mental capacity or attainment. When a pupil's mark in a certain subject is 80, we do not mean, as we do in the case of his weight or height, that we have applied some objective unit of measure to the pupil's attainment in that subject, and found thereby this measurement. No such units of measure are here available. What the teacher ordinarily means, when on some test he gives the pupil a rating of 80, is that the pupil has solved 4 out of 5 examples, composed correctly 8 out of 10 sentences, or written correctly 16 out of 20 words, no regard as a rule being given to their relative difficulty. Or it may mean that the pupil has treated some assigned topic in written discourse with a fair degree of fullness, intelligence, and formal accuracy.

It may be noted then that school ratings are without reference to fixed standards. We deliberately give equal credits for performances

of obviously unequal difficulty. We set a paper, say, of five exercises as a test in some subject. The fourth exercise is distinctly more difficult than any one of the three preceding, while the fifth may require a greater power of thought than all the others combined. Yet in rating the pupils the exercises are often given equal weight. This meets the practical end of separating the pupils into groups of poor, average, and high attainment, and aids materially in carrying out the work of instruction and promotion.

Such ratings separate the pupils on a basis of relative attainment, but in no wise give us the absolute differences between them. Obtained in the manner described, school marks evidently can not be treated as numbers ordinarily are. We can not say that a pupil whose mark is 100 is twice as intellectual as a pupil whose mark is 50, or that he has four thirds times the mental power or attainment of a pupil whose mark is 75. "Obviously school marks are quite arbitrary, and their use at their face value as measures is entirely unjustifiable. A 90 per cent. boy may be four times or three times or six fifths times as able as an 80 per cent. boy."[1]

The assignment of a school mark always presupposes some arbitrarily fixed scale which is kept in mind by the teacher. Usually this scale runs from 0 to 10 or from 0 to 100. The rating of a pupil consists in assigning him a position somewhere on this scale. The rating will vary more or less with every change of subject and with every change of teacher. This is due in the main to a change in the abilities of the pupil, or in his efforts, or in the difficulty of the subject, or in the standard of the teacher. These variations, however, would never be such as to confuse the ratings of bright, capable, and painstaking pupils with those of the dull, listless, and effortless. The latter will always drift to the lower part of the scale, while the upper part will be the position occupied by the former. The entire distribution of a school will in general not be far from that of the normal surface of frequency with the average somewhat above the passing mark.

School marks are measures of relative, and not of absolute, mental attainment and ability. We can not say that a pupil whose rating is 0 has absolutely no ability, or that a pupil whose rating is 100 has perfect ability or the highest possible ability, in that subject. What we mean is that in the one case the pupil has met none, or practically none, of the requirements for passing the subject; while in the other he has met all the requirements in a completely satisfactory way. To measure any absolute ability of a pupil we would have to obtain a real 0-point in that ability, a real objective unit of the ability, and a

[1] Thorndike, "Mental and Social Measurements," p. 7.

reliable method of measurement. No one of these as yet is at the service of psychology or education.

With absolute measurements, however, we may suppose that the distribution of individual pupils would be practically the same as that resulting from school ratings. Those that we have judged to be of the highest ability would be found at the top of the scale, and those of the lowest ability at the bottom of the scale, while those of medium ability would fall between. This statement of course is a mere assumption. And at present there is no way of testing its validity. But there can hardly be ground for doubt that our school ratings are at least approximate measures of attainment, and that our school groupings of pupils as to ability are roughly correct. Certain important exceptions to this contention have been pointed out. Thus it has been noted by numerous writers that that class of ability ranked as genius is not only incorrectly, but often fallaciously, measured by school standards. It must be said, however, that school standards measure, on an average, all-round ability, while the genius may have a decided bent in a single direction, with marked deficiencies in other directions. Moreover the quality that constitutes genius may sometimes be of later development. The school rating may not, therefore, be as wide of the mark even in this case as is often suspected. There may also be a real difference between the attainment and capacity of pupils intellectually bright but deficient in energy. An absolute rating of their intellectual ability would fix them at a higher level than that of their school ratings. Our school ratings measure mental capacities in the lump, however, while absolute ratings may be assumed theoretically to measure them in isolation. In this case then, an absolute rating would mark the pupil as high in intellect, low in application, and moderate in efficiency. Here again then we assume that an average of the different absolute ratings would tend to approximate the rating of the school. We think it therefore safe to conclude that the groupings on an absolute scale of measurement would be at least roughly the same as those on an arbitrary scale. And the absolute-scale marks, while far more satisfying to the scientific taste, would probably be little or no more useful for the practical purpose for which marks are employed in the present state of educational administration than those already at our service.

We are not able to say then just what the absolute difference in ability is between a high school pupil whose rating is 90 and another whose rating is 60, even when those ratings are assigned by the most capable and conscientious teachers. But that the one has met the requirements of the school in a far more successful way than the

other—that is, has been more efficient in written and oral recitations and very likely more orderly in deportment—there is no room for reasonable doubt. The highest ratings can be secured only by the exercise of high intellectual and moral endowments. We may therefore confidently conclude that other things being equal, of any two pupils whose average ratings in school are respectively 90 and 60, the former's general mental equipment is decidedly better than that of the latter.

But the whole difficulty, one would be apt to think, lies in the fact that other things are never equal. Herein, however, consists the exact value of statistical treatment. It is a primary principle of statistical science that all random irregularities that hopelessly disturb and confuse individual cases tend to equalize and rectify themselves when treated in the aggregate. Differences which arise between large groups of individuals, when treated in this manner, are fundamental and real. They must be regarded as inherent in the nature of the thing treated and not in matters of chance.

With other ends in view, several statistical studies of school marks have already been made with results of value to psychology and education. The rather elaborate system of records kept in the high schools of the City of Greater New York suggested the practicability of the present study. The large number of items recorded lend themselves readily to statistical treatment. If we wish to consider the work of any two groups of pupils for a determination of their likenesses or differences, our chief concern at first is the selection of such cases as will be fairly typical of the groups, and then to make the number of cases selected large enough for chance variations within the groups to counterbalance each other. When we have obtained the records of a sufficient number of cases, we have only to tabulate and compare the data recorded, in order to ascertain the relative standing of the groups with reference to any matter of interest. Whatever differences there may be between the groups will be at once manifest, and in a numerical form. If one group surpasses the other in any respect, the fact is apparent on the face of the data; and if the number of cases is great enough to render the selection sufficiently representative, then we may with some assurance make out, not only the fact of difference, but also an approximation to its exact measurement.

Among the items recorded are the dates of birth of the pupil and of his entrance to the high school, a record of attendance with the days of absence and the times of tardiness, and, as a rule, four marks in each subject for each term of five months—a set of two marks, one based on the daily class-room record and one on a final examination

being made for each quarter. Sometimes all the marks are averaged and a single mark is recorded for the term. The pupil, as a rule, is graded by one or more different teachers in each subject. The marks are recorded in per cents. The passing mark is 60.

Great care was exercised in the selection of cases, as the significance and the reliability of the study were so largely dependent upon this factor. All records which have been considered were taken from mixed schools in order that the measurements of pupils might be obtained in terms of a single standard. To compare the records of pupils in colored high schools with those in high schools for whites would at once involve us in the difficulty of two more or less different standards of scholarship without any known or easily ascertainable common measure. This difficulty was obviated by selecting cases from mixed schools only. From any one school the same number of cases was selected for each group. Whatever standards were applied, then, in the testing or measuring of one group were applied also in the case of the other.

As to the colored pupils, every individual was considered whose name and record could be obtained. By colored pupils are meant such as are reported by teachers as "colored" and doubtless only those are included who were obviously possessed of a considerable degree of negro blood. As race or nationality is not indicated on the record card, it was found difficult to get the names of colored pupils except such as were actually in attendance at school. In two large high schools a fairly complete list of all the colored pupils who entered during the years 1906–1909 inclusive was secured. Hence, in the case of the colored pupils, the whole group has been studied so far as it could be obtained.

In choosing white pupils for comparison, the rule for random selection was at all times carefully observed. Several different nationalities were included in the study, among them, notably, English, Germans, Irish, Italians, and Jews. The selection of cases from groups of pupils who had been put together in classes on the basis of good or poor scholarship was consistently avoided. An effort was made to pair the individuals of each group at random on entering high school; that is, if six colored pupils entered any high school at the opening of any term among a whole entering class, of, say, 400 pupils, then out of the 394 whites, six were selected at random, and the subsequent records of attendance and scholarship of the two groups were followed up and compared. This method had certain advantages, and was employed as far as practicable. In particular, if carried out, it would have shown which of the two groups tended to remain in school the longer, and which one of a colored and white

pair would be the more likely to graduate from the high school. Also following up the progress of the pupils from the time of entrance, it is obvious that this method would give the most satisfactory and reliable comparative result.

But the selection of cases by this method was not always practicable. The necessary records at times could not be easily secured. A second method of selecting white cases was then employed. As the colored pupils were practically always in actual attendance at school, white cases were selected at random from the current directory, care being taken to pair pupils only who had been in school the same length of time. If the record of a colored pupil who had been discharged or graduated was obtained, a chance selection of a record was made from the corresponding group of white pupils. This method of selection tends of course to make the record of attendance of the two groups the same, and interferes with the problem of determining which group has the tendency to remain longer in the high school.

There is a popular belief that mulattoes are more successful in learning than colored pupils of the pure negro type. It would then have been a matter of interest to separate the colored pupils into subgroups on the basis of the degree of race mixture, and to note their relative class standing; but judgments of this sort were so difficult to obtain and so often appeared to be of doubtful value that the effort to attain this result was abandoned.

Another question bearing an important relation to the study is the degree to which the white and the colored high school pupils respectively represent the same proportionate selection from the adolescent population of the two races. We are not able to determine this precisely but statistical data go to show that the selection is much closer for the colored than for the white race. The colored population of the state of New York according to the census of 1910 is about 1.5 per cent. of the entire population; while according to the reports of the United States Commissioner of Education the colored high school enrollment for the state of New York was .36 per cent. of the total enrollment in 1907; .38 per cent. in 1908; and .14 per cent. in 1909. This would show that in proportion to the population about four times as many whites as colored are enrolled in the high schools.

While the colored high school pupils thus represent a closer selection from the entire population than do the whites in the ratio of about four to one, we do not know upon what basis this selection is made. It is probably upon a mixed basis of intellectual ability and social standing. If the selection were made solely upon the basis of intellectual ability, the closer selection of a group would naturally

accrue to its advantage in a comparative study like this. And if the social standing of the family in the community were taken as a basis, the result of selection would probably be largely the same. There can be little doubt that mental ability and material prosperity will be found to be associated together in a very large degree.

CHAPTER III

Comparative Ages and Time of Attendance

The average age of the pupils of the two groups on entering high school is of importance because of its bearing on their progress through the grades; and their average time of attendance, because of its relation to their continuance in school. A determination of these will serve to throw statistical light on the problems of "retardation" and of student "mortality."

TABLE I

Showing Ages of Pupils on Entering High School

Years	No. Whites	No. Colored
12.25	3	1
12.50	1	2
12.75	5	4
13.00	4	2
13.25	11	9
13.50	7	7
13.75	13	6
14.00	13	11
14.25	15	8
14.50	21	15
14.75	12	7
15.00	14	9
15.25	11	12
15.50	6	11
15.75	2	7
16.00	5	7
16.25	1	5
16.50	1	3
16.75	3	2
17.00	1	7
17.25	0	2
17.50	0	3
17.75	0	3
18.00	0	1
18.25	0	0
18.50	0	1
18.75	0	0
19.00	0	1
19.25	1	4

The average age of whites is 14 years 5 months; of colored, 15 years 2 months. The median age of whites is 14 years 6 months; of colored, 15 years 1 month. The A.D. of whites is 9 months; of colored, 15 months.

The ages of the pupils on entering high school are shown in Table I. The average age of the white pupils is 14 years 5 months; of the colored, 15 years 2 months—a difference of nine months. On account of the undue influence of a few cases of colored pupils who were unusually late in entering high school, the median may be considered a better comparative measure for the age of entrance. The median age of the whites is 14 years 6 months; of the colored 15 years 1 month—a difference of seven months.

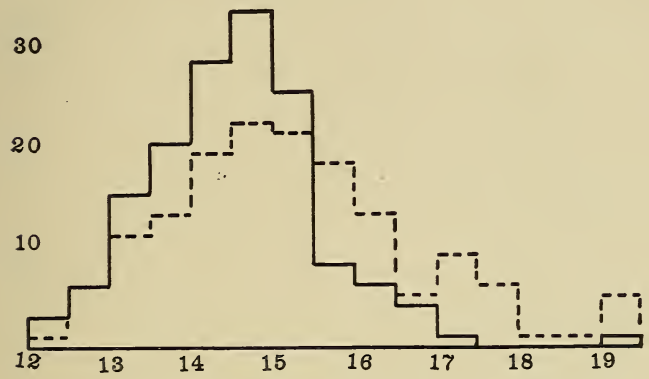

FIG. 1[1] Showing the Distribution of Pupils by Age. (See Table I.)

In either case the colored pupils on entering high school have, on the whole, more than half a year's age in advance of the whites. This can be due only to a later entrance into the elementary school, or to retardation in the grades, or to a temporary delay after graduation from grammar school before entering the high school. In view of the compulsory education law, which would tend to equalize the ages of all pupils on entering the elementary school, and in view of the fact that there would be no probable reason for a temporary discontinuance of school life at the close of the grammar school period except in accidental cases, retardation in the grades seems to be the only likely explanation. If this is found to be true, it will mean that it requires the colored pupils on the whole from one to two terms longer than the white to complete the elementary school course—a matter of considerable significance from the point of view of teaching as well as from that of educational expenditure.

[1] The solid line indicates the distribution of the white pupils, the broken line the colored.

TABLE II

SHOWING THE DISTRIBUTION OF PUPILS ACCORDING TO THE TERM OF ATTENDANCE
From all Schools

Term	White	Colored
First	29	23
Second	31	20
Third	20	21
Fourth	20	18
Fifth	6	11
Sixth	7	9
Seventh	14	17
Eighth	13	9
Ninth	5	7
Tenth	4	9
Eleventh	0	2
Twelfth	0	2
Thirteenth	0	1

The average time for all whites is 3.8 terms; all colored, 4.5 terms.

Note.—For pupils in school the ordinals at the left show the term of attendance; for discharged pupils, the term of attendance when discharged.

The records show also that colored pupils remain in the high school a greater length of time than do the whites. The facts are indicated in Table II. The average time spent in school, or rather

FIG. 2. Showing the Distribution of Pupils by the Number of Years of Attendance. (See Table II.)

that had been spent in school when the records were taken, was for 149 colored pupils 4.5 terms, and for 149 white pupils 3.8 terms. This would tend to indicate that colored pupils remain in the high school for a considerably longer period than the whites. On account

of the large numbers of both groups who early close their high school career, it does not necessarily have any very close connection with the average time required by each group for completing the course of study. It mainly points to the conclusion that for some or various reasons, white pupils are more prone to quit the high school than are the colored.

The selection of cases by the second method was such as not to enable us to determine the relative time spent in school. The pupils studied being taken from the current enrollments and paired according to date of entrance, as has already been explained, the two groups are put on practically the same basis in point of time of attendance. This selection obviously tends to neutralize any differences of this sort that might exist between the groups. It also tends to make the obtained time greater than the actual time of attendance for each group. For the colored pupils selected, being those in actual attendance at the time, represent only the survivors of the whole entering group, and their average time of attendance is naturally greater than the average for the entire group. The same observation holds of course for the whites who were selected for comparison. For the pupils studied, about 28 per cent. of the whites attained the average time of attendance for the colored. About 12 per cent. of the whites and 18 per cent. of the colored remained in school eight terms or more. This would seem to indicate that the probabilities of remaining in high school long enough to complete the course are considerably greater for the colored pupil than for the white. But the number of cases is so small as to give no great reliability to the last mentioned estimate.

We have found that colored pupils are, on an average, from 7 to 9 months older than white pupils on entering the high school. To just what extent this retardation in the grades exists in the New York City and other city schools could be determined only by a special study of the subject. The time will probably come when fuller statistical light will be sought on such problems for the better guidance of educational administration. There are considerations and available statistical data, however, which tend to show that it is, on the whole, probably more pronounced than is here indicated.

The law requires children in New York City under 16 years of age to be in attendance at school. Children under this age can not be legally employed unless they first obtain work certificates from the Board of Health. To be eligible to receive a work certificate, the child, among other things, must have attended school for 130 days after his thirteenth birthday. In accordance with this provision of the law, a pupil may drop out of school and seek employment while

yet in the grades. This is a matter of common occurrence. It applies for the most part to backward pupils. We have no direct data showing that it is true to a greater extent of colored pupils than of whites. It is possible, however, that this is the case; and if so, the actual measure of retardation would be greater than that which we have obtained.

The school reports of cities having a considerable colored population often contain data bearing on the problems of retardation and school attendance. In the cities of the Northern States, however, where separate schools for colored pupils are not maintained, and where the race of the pupils is not indicated on the school record, no data pertaining to these topics are published. Separate school systems are maintained in all the Southern States, and school reports contain an abundance of material relating to the education of the races. The colored schools as a rule, however, are less adequate in organization and equipment, and in the training and number of teachers. The standards of education must therefore vary much, even when serious effort is put forth to make them the same. It may well be, then, that conclusions drawn from a comparative treatment of the data published in these reports will have to be subjected to more or less revision; but they point to certain general tendencies which seem to be clearly defined and may prove to be fundamental. In the Kansas City (Missouri) report for 1910, Tables III. *A* (White) and III. *A* (Colored) show the number of pupils finishing each grade with the time required for its completion. There were 11,594 white pupils finishing grades, and 1,557 colored. We have calculated the time required as shown in the annexed table.

TABLE III

Grades	I	II	III	IV	V	VI	VII	Total
Av. No. Yrs. for whites	1.19	1.12	1.14	1.14	1.05	1.17	1.08	7.89
Av. No. Yrs. for colored	1.24	1.21	1.19	1.14	1.27	1.12	1.24	8.41
Difference	.05	.09	.05	.00	.22	.05	.16	.52

The number for the first two time-intervals in the tables of the Report were undistributed. So we used the numbers given as belonging to the first interval only. The average time required for colored pupils to complete a grade is somewhat greater in each instance than that required for the white, except in the fourth grade, where it is the same, and in the sixth, where it is less. On the whole, it requires about half a year longer for colored pupils to pass through the grades.

In the same report we find that the median age for 1,617 whites when they are supposed to enter the high school to be 14 years 11

months; and for 132 colored pupils, 15 years 4 months—a difference of 5 months.

From the St. Louis report for 1910, we take the two tables here given.

TABLE IV

AVERAGE AGE OF PUPILS BEGINNING KINDERGARTEN AND FIRST GRADE

	White	Colored	Difference	Normal Age
Kindergarten	6.24	6.33	.09	6.00
First grade	7.26	7.49	.23	7.00

TABLE V

AVERAGE AGE OF PUPILS COMPLETING KINDERGARTEN AND GRADES

	White	Colored	Difference	Normal Age
Kindergarten	7.00	7.13	.13	7.00
First grade	8.39	8.95	.56	8.00
Second grade	9.58	10.11	.53	9.00
Third grade	10.61	11.26	.65	10.00
Fourth grade	11.75	12.29	.54	11.00
Fifth grade	12.58	13.01	.43	12.00
Sixth grade	13.29	14.46	1.17	13.00
Seventh grade	13.98	14.89	.91	14.00
Eighth grade	14.79	15.61	.82	15.00

These tables indicate that the colored pupils are a little, but not much, older than the white pupils on entering the kindergarten. The difference in age is somewhat greater on entering the first grade —the average difference being from two to three months. At the time of completing the first grade, the average difference in age is more than half a year, which seems to indicate a considerable retardation of the colored pupils in the first grade. After the first grade, the difference in average ages does not vary a great deal until the sixth grade is reached, when according to the figures of the table, the difference suddenly rises to a maximum. The difference in average ages at the completion of the eighth grade is approximately 10 months—about 7 of which are due to retardation in the grades, especially the first and the sixth. The difference in average ages between the pupils, both colored and white, completing any two successive grades is more than a year in every instance until the fifth grade is reached. At this point it becomes less than a year, which would probably indicate a heavy withdrawal of the backward pupils from school in the fifth and succeeding grades.

The report of the Memphis (Tenn.) public schools for the school year of 1908–1909 gives the average ages of the white and the colored pupils in the various grades. (See page 24.)

TABLE VI

AVERAGE AGE OF WHITE AND COLORED PUPILS IN THE SEVERAL GRADES OF THE MEMPHIS PUBLIC SCHOOLS

Grade	Av. Age of Whites	Av. Age of Colored	Difference
First	7.04	8.2	1.2
Second	8.7	10.4	1.7
Third	10.0	11.6	1.6
Fourth	11.1	12.4	1.3
Fifth	12.0	13.3	1.3
Sixth	12.8	14.1	1.3
Seventh	13.8	14.9	1.1
Eighth	14.6	15.7	1.1

This distribution by ages is made out for 8,500 white pupils, and 5,180 colored. Retardation seems to occur here mainly in the first and second grades. This is further emphasized by the fact that 61 per cent. of the colored pupils are found in these two grades as compared with 36 per cent. of the whites.

From the annual report of the St. Louis public schools for 1909 (Table *C*, page 50) we take the distribution of pupils by ages in the high schools.

TABLE VII

DISTRIBUTION OF PUPILS BY AGES IN THE ST. LOUIS HIGH SCHOOL, JUNE 1, 1909

Years	12	13	14	15	16	17	18	19 & over	Total
Whites	2	35	268	826	954	969	703	418	4,175
Colored	0	1	9	44	78	75	94	93	394

The average age of white high school pupils here is 17 years; of colored, 17 years 10 months. Of the whites about 27 per cent., and of the colored 47 per cent., are 18 years old or older. Of the colored pupils nearly 24 per cent. are 19 years old or older, as compared with 10 per cent. of the whites. In the same table (Table *C*) it is shown that more than 5 per cent. of the colored and less than 2 per cent. of the whites, who are still in the grades, are 16 years old or older. Of 572 white pupils in the West Port high school, Kansas City, in 1907, no one was over 20 years of age; while of 310 colored pupils in the Lincoln high school, eighteen were over 20 years of age.

There is a decided agreement between these various school reports and the data we have collected. Our own table shows that the great body of white pupils enter the high school between the ages of 13 and 15.5 years; while the colored pupils enter in large numbers between the ages of 13 and 16.5 years. Four per cent. of the white and 25 per cent. of the colored pupils enter after the seventeenth birthday. Twenty-seven per cent. of the whites are as old as the median age of the colored. The whites are more regular in age on entering the

high school. The average deviation in age for whites is 9 months; for colored, 15 months.

The data presented seem to justify two important conclusions. First, the colored pupils, on an average, suffer a considerably greater retardation in the grades, and are more advanced in age on entering the high school. Second, the white pupils are subjected to a greater mortality or to an earlier discontinuance of high school than the colored. Relative retardation and persistence in school would seem to be characteristic of the high school colored group.

It would be interesting to know the reason for the difference in the time of attendance of the two groups. There are likely a number of considerations each contributing in a measure to it. The cause may be for the greater part economic and social. There is a considerably wider field of opportunity open to white high school pupils for securing employment, and on this account they may be tempted to leave school even to an extent out of proportion to their much greater numbers. Also a relatively much smaller per cent. of the colored school population is enrolled in school than the white. It is therefore possible that the pupils of the colored group are selected from families in a better economic condition than the average white family, and hence there may be less need for the help of the children in maintaining the home. It is also possible that the negro parent, in many cases, has an even greater faith in the advantages which an education gives to his children, and that he is consequently the more self-sacrificing in his efforts to keep them in school. The cause may also lie partly in the different mental constitution of the groups. The negro pupil probably has greater patience than the white when making little or no progress in his studies; he may also be less sensitive to failure and ridicule; and he may therefore be less likely to withdraw from school on account of discouragement. It may be that the initiative and enterprise of the white pupil cause him to grow restless in school and long for more active work, or a greater desire to earn money may induce him earlier to seek employment. However we may account for it, the records seem to indicate clearly that colored pupils once in the high school tend to remain longer than the whites. According to the records obtained, of a hundred pupils of each group having entered high school at any time, when 50 per cent. of the colored pupils are still in attendance, only 28 per cent. of the whites will remain.

CHAPTER IV

Comparative Scholastic Efficiency

Of more importance than matters of age or attendance is the success of the pupil in school. The relative scholastic success or efficiency of the white and the colored high school pupils was the topic of central interest in pursuing the investigation. The comparative scholastic records of the two groups are shown in Tables VIII.–XXII.

Table VIII. summarizes the results of the work of all pupils of each group for the whole period of time spent in school in the following subjects: English, modern languages, ancient languages, mathematics, science, history, and the commercial branches. One mark is here given for each pupil. This mark is obtained by scoring all the different scholarship marks set down on the pupil's record card and determining their median. When any subject is repeated, however, the marks made on a second or later trial are not considered. The number of marks from which the medians are obtained varied greatly according to the length of time the pupil had been in school, as well as in accordance with the course of study pursued, and the number of marks required to be put on record in the different high schools. The average number of marks from which each median was obtained was 60 or more—which means that the median measure here given is about the average of some sixty different measures of a pupil's achievement. All these measures were in turn averages of a series of individual measures previously made in class recitations or tests.

Table VIII., then, is a general table, embodying in a condensed form all the facts of the other tables on the scholastic standing of the two groups. It represents in a general way the comparative average attainment of white and colored pupils in the high schools of the City of New York; and presumably like results would be obtained in other cities where similar conditions prevail.

To determine the relative standing of the two groups, we first set down the median marks of the individual pupil as given in Table VIII. and reckon in turn their median. This final result gives a measure of what each group as a whole has attained in scholarship, and may be regarded as a sort of all-round measure of comparative mental ability as applied in school studies.

TABLE VIII

MEDIAN MARKS IN ALL SUBJECTS FOR ALL TERMS, FIRST TRIAL

Measures	Whites	Colored
Below 20	0	0
20– 24	0	1
25– 29	0	0
30– 34	1	0
35– 39	1	0
40– 44	3	5
45– 49	0	3
50– 54	8	16
55– 59	9	23
60– 64	46	49
65– 69	29	34
70– 74	29	4
75– 79	7	6
80– 84	8	4
85– 89	1	1
90–100	3	1
	145	147

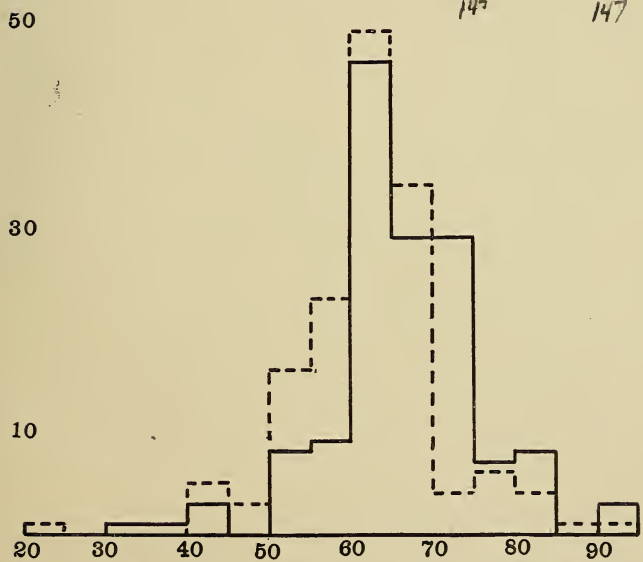

FIG. 3[2]. Showing the Relative Attainment of the Two Groups in all Studies. (See Table VIII.)

[2] The horizontal row of numbers indicates the marks obtained by pupils on the scale 0–100; the vertical row indicates the number of pupils obtaining the various marks.

The median mark of the 150 cases of white pupils in all subjects combined is 66; and of the 150 cases of colored pupils 62, a difference of 4 points, or 4 per cent.

One might have expected a higher average standing for either group than the one here attained. The artificial effect of the passing mark of 60 is obvious. There is a decided crowding of the pupils in the 60's. There are several easily assignable reasons for this. Here will naturally be found the great body of those pupils to whom passing a subject is a spur to industry, but in whom the joy of making an excellent record or the duty of doing one's best fails to excite the highest endeavor. Here also fall many plodders whose steady efforts obtain for them the prize of promotion. The spur of the teacher also holds some up to the passing mark who would otherwise fail; and her final efforts, especially when promotion is decided by an examination at the close of the term, are given most assiduously, not to those pupils who are certain of passing or certain of failing, but to those whose standing is still a matter of doubt. We judge, therefore, that whatever the passing mark is made, so long as the requirements are such that the average pupil can with reasonable effort meet them, the distribution of the cases will not be essentially different from what it is here. The central position or tendency of the white group is 6 points above the passing mark; for the colored group, 2. This fact would indicate that promotion is, as a rule, considerably more doubtful of attainment for pupils of the colored group.

A reference to the table shows that 44 cases, or 29 per cent., of the colored pupils reach or surpass the median mark for white pupils; that is, 29 out of a hundred colored pupils would get as high a rating in school studies as 50 out of a hundred white pupils; or, what comes to the same thing, the 29 highest of a hundred colored pupils will outrank the lowest 50 of the whites. Corresponding to these 50 lowest cases of whites would be 71 cases of the colored group. One hundred and nine cases, or 73 per cent., of the white group reach the median mark of the colored group.

The middle 50 per cent. of white pupils range in their marks from 61 to 72, inclusive; the middle 50 per cent. of colored, from 57 to 67, inclusive. The variation of the white group is slightly greater than that of the colored group, the average deviation being in the one case 7, in the other 6.5. The median deviation probable error for the white group is 5.5; that for the colored group, 5.

The colored pupils being largely made up of crossings between races, one might naturally have expected a wider degree of variability to have appeared in the scholastic attainments of this group. It would seem natural to expect that race mixture would tend to in-

crease the variability of the offspring. There are indications, however, that the negro as a race is somewhat less variable in hereditary endowments than is the white race. It may be that the variability of the former lies entirely within the limits of the variability of the latter. In such case, the increased variability of one group might still be less than the natural variability of the other. The extremes of scholastic variation as here presented reach about the same limits. That the average deviation or variability of the colored pupils is somewhat less may probably be due in part to their more compact grouping about the passing mark.

It may be observed that the general impression among teachers is that colored pupils are less successful in their studies than are the whites. Hence a greater difference in the average standing or central tendency of the two groups might have been anticipated. A difference of 4 points in average class standing between two groups pursuing a large number of studies does not seem at all striking; but a difference of ability which much exceeded this would render the coeducation of the two races impracticable. The difference between the two groups is small indeed when compared with their overlapping. If their records were indiscriminately mixed, you could not possibly separate the one from the other by the character of the marks. This shows that educationally they may be regarded as a single group. We assume, then, that, under such conditions as prevail in the high schools of the City of New York, a difference of 4 points as determined by teachers' marks is a fair measure of the difference in scholastic standing between the two groups. It is a matter of regret that no data sufficiently like the above exist with which to compare this result. The school reports of the city of Nashville show that the average marks of white and colored high school pupils for 1904–1905 were, respectively, 74 and 66; and for 1905–1906, 75 and 59. The differences here are substantially greater than the difference obtained from our data. The groups in Nashville, however, are educated in separate schools. It is quite certain that equal facilities are not provided for both groups. It is also probable that the standards of efficiency are not the same for both classes of schools, so that reliable comparisons can not be made. It is furthermore probable that the relative degree of race mixture in the colored pupils of the two sections may be a factor in the problem.

Tables IX.–XXII. show the comparative standing of the two groups in special subjects. They are of interest for the reason that they indicate the relative attainment of colored and white pupils in different fields of study, involving more or less different forms of mental activity. The first two of these tables are based upon the

work in English. Table IX. shows the median marks of both groups in the study of English for the first half-year in high school; Table X. shows the same marks in English for all terms combined. The marks recorded in Table IX. are the medians of the several marks given to individual pupils in first term English; in Table X. they are the medians of all marks received in the study of English. It

TABLES IX–X

MEDIAN MARKS IN ENGLISH

Measures	First Term		All Terms	
	White	Colored	White	Colored
Below 20	1	0	1	0
20– 24	0	0	0	0
25– 29	0	0	0	0
30– 34	2	1	1	1
35– 39	1	3	1	1
40– 44	1	5	3	4
45– 49	2	6	1	9
50– 54	8	14	9	19
55– 59	7	18	5	25
60– 64	24	39	36	39
65– 69	28	26	37	28
70– 74	31	10	28	10
75– 79	16	11	11	6
80– 84	13	6	10	4
85– 89	6	1	3	3
90–100	3	2	3	0

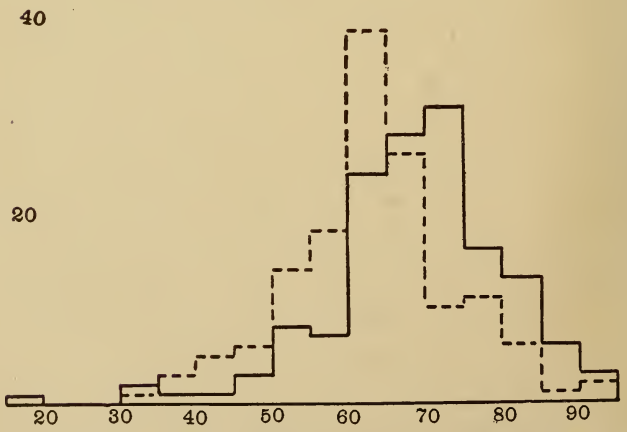

FIG. 4. Showing the Relative Attainment of the Two Groups in First Term English. (See Table IX.)

would have been interesting to make a comparison of the standing of the two groups in English and in other subjects for several successive intervals, and especially for successive years; but our data are insufficient to give the desired reliability to such results. The reliability of an average measurement depends largely upon the number of the measurements considered. We chose a figure for the first term because of the large number of different cases; and a figure for all terms, because of the large number of different measurements.

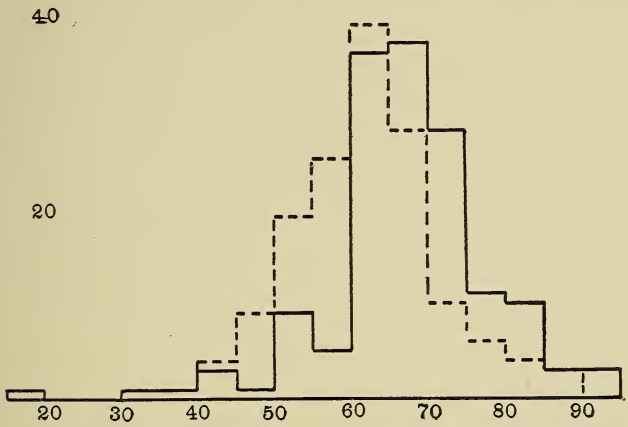

FIG. 5. Showing the Relative Attainment of the Two Groups in English for all Terms. (See Table X.)

The median mark of the white pupils in first term English is 69, of the colored 62; and 22 per cent. of the colored pupils reach the median mark of the whites. The median mark of the white pupils in English for all terms is 67, for colored, 61; and 24 per cent. of the colored pupils reach or surpass the median mark of the whites.

Tables XI. and XII. show the comparative records of the two groups in the study of modern languages. The modern languages pursued are mainly German and French, Spanish being the language studied in some instances. In a few cases, also, two languages are studied simultaneously, after the second year. When a language was begun in the third year, it was reckoned among the third year subjects.

For the first term the median mark of white pupils in modern languages is 66, of colored 63; and 42 per cent. of the colored pupils reach the median mark of the whites. For all terms the median

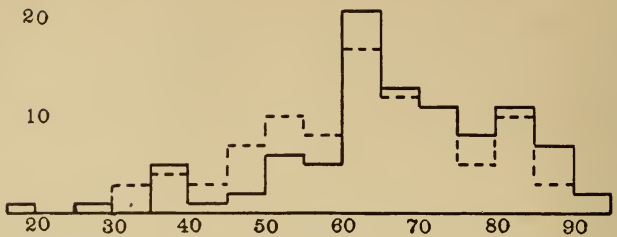

FIG. 6. Showing the Relative Attainment of the Two Groups in First Term Modern Languages. (See Table XI.)

TABLES XI–XII

MEDIAN MARKS IN MODERN LANGUAGES

Measures	First Term		All Terms	
	White	Colored	White	Colored
Below 20	1	1	3	2
20– 24	0	0	0	0
25– 29	1	1	0	2
30– 34	0	3	2	2
35– 39	5	4	5	2
40– 44	1	3	4	5
45– 49	2	7	5	18
50– 54	6	10	15	15
55– 59	5	8	16	21
60– 64	21	17	36	31
65– 69	13	12	23	19
70– 74	11	11	19	10
75– 79	8	5	12	6
80– 84	11	10	4	5
85– 89	7	3	4	2
90–100	2	2	2	0

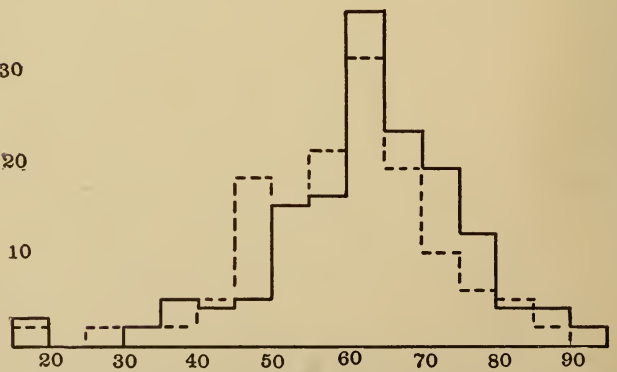

FIG. 7. Showing the Relative Attainment of the Two Groups in Modern Languages for all Terms. (See Table XII.)

mark of white pupils is 63, of colored 60; and 33 per cent. of the colored pupils reach the median mark of the whites.

Table XIII. shows the median marks in mathematics for the first term; Table XIV. the same for all terms. Elementary algebra is the subject of study in first year mathematics except in a few cases in which commercial arithmetic is studied simultaneously with it or is substituted for it. Plane geometry is in nearly every instance the subject studied during the second year. We have in addition a few cases in which intermediate or higher algebra, solid geometry, or plane trigonometry is pursued.

TABLES XIII–XIV

MEDIAN MARKS IN MATHEMATICS—SUBJECTS COMBINED

Measures	First Term		All Terms	
	White	Colored	White	Colored
Below 20	3	4	1	6
20– 24	0	1	1	2
25– 29	0	1	0	0
30– 34	3	1	5	4
35– 39	5	6	3	6
40– 44	0	5	3	9
45– 49	5	9	8	7
50– 54	14	14	10	18
55– 59	4	11	17	23
60– 64	34	14	26	27
65– 69	14	15	22	17
70– 74	13	20	11	11
75– 79	22	18	17	7
80– 84	17	2	11	3
85– 89	8	8	6	3
90–100	6	7	2	4

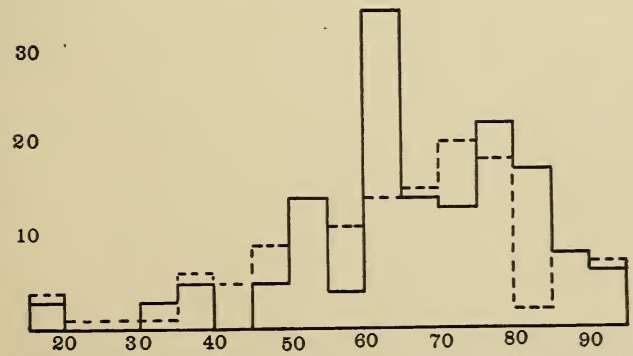

FIG. 8. Showing the Relative Attainment of the Two Groups in First Term Mathematics. (See Table XIII.)

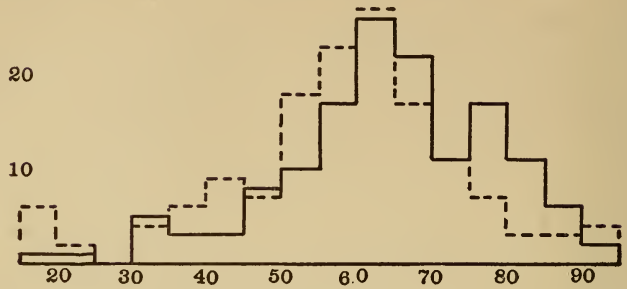

FIG. 9. Showing the Relative Attainment of the Two Groups in Mathematics for all Terms. (See Table XIV.)

The median mark of the white pupils in first term mathematics is 66, of colored pupils 65; and 46 per cent. of the colored pupils reach the median mark of the whites. The median mark of the white pupils for all terms in mathematics is 64, of the colored 59; and 32 per cent. of the colored pupils reach the median mark of the whites.

Tables XV., XVI., XVII. show the comparative standing of the groups in arithmetic, algebra, and geometry respectively. The considerable difference in relative standing between the two groups during the first term and for the entire period suggested the tabulation of the results separately in order to see their comparative attainments in the different mathematical branches. The median mark of

TABLES XV–XVII

MEDIAN MARKS IN MATHEMATICS—SUBJECTS SEPARATE

	ARITHMETIC First Term		ALGEBRA First Year		GEOMETRY Second Year	
Measures	White	Colored	White	Colored	White	Colored
Below 20 ...	0	0	3	4	3	8
20– 24 ...	0	0	2	0	2	5
25– 29 ...	0	0	0	1	0	0
30– 34 ...	0	1	4	2	1	3
35– 39 ...	2	2	3	5	1	6
40– 44 ...	0	4	2	8	5	6
45– 49 ...	0	1	11	10	6	6
50– 54 ...	3	4	8	12	6	9
55– 59 ...	3	3	13	13	10	10
60– 64 ...	5	10	23	25	18	9
65– 69 ...	13	10	21	11	8	4
70– 74 ...	6	6	11	18	4	5
75– 79 ...	8	4	15	13	8	1
80– 84 ...	5	0	12	3	6	1
85– 89 ...	2	0	7	3	2	1
90–100 ...	1	0	2	5	0	0

white pupils in arithmetic is 67, of colored pupils 63; and 39 per cent. of colored pupils reach the median mark of the whites. The median mark of white pupils in algebra is 64, of colored 62; and 44 per cent. of the colored pupils reach the median mark of the whites. The median mark of white pupils in geometry is 60, of colored 50; and 26 per cent. of the colored pupils reach the median mark of the whites.

In the study of elementary science, the subject of biology or physiology is usually pursued in the first year of high school, chemistry the second year, and physics the third year. Tables XVIII.–XIX. show the comparative results of the study of the sciences.

TABLES XVIII–XIX

MEDIAN MARKS IN SCIENCE

Measures	First Term		All Terms	
	White	Colored	White	Colored
Below 20	0	0	0	0
20– 24	0	2	0	1
25– 29	1	1	1	0
30– 34	1	1	0	4
35– 39	0	2	0	3
40– 44	4	4	4	5
45– 49	3	7	3	8
50– 54	4	12	5	13
55– 59	13	8	16	14
60– 64	15	22	27	35
65– 69	26	24	23	18
70– 74	29	19	28	16
75– 79	18	17	17	9
80– 84	14	9	5	4
85– 89	3	4	1	0
90–100	2	2	1	0

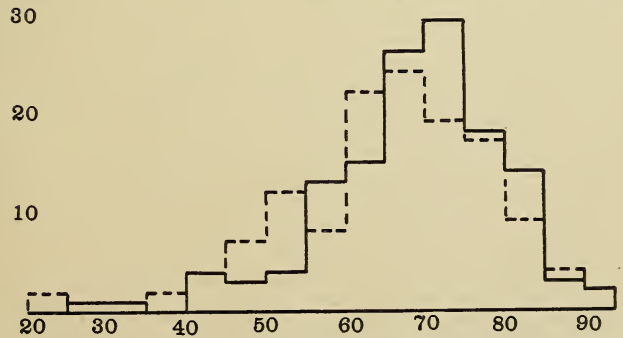

FIG. 10. Showing the Relative Attainment of the Two Groups in the First Term Science. (See Table XVIII.)

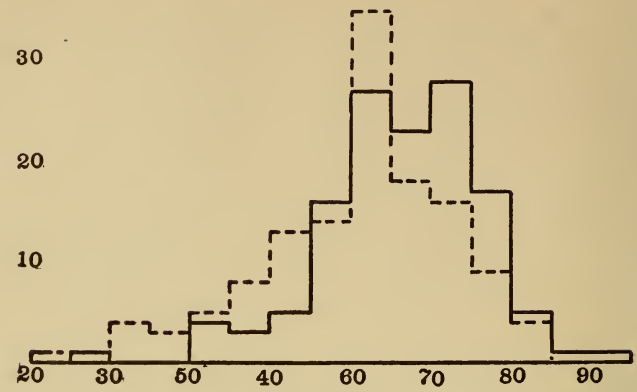

FIG. 11. Showing the Relative Attainment of the Two Groups in Science for all Terms. (See Table XIX.)

The median mark of the white pupils in science for the first term is 69, of the colored 65; and 39 per cent. of the colored group reach the median mark of the whites. The median mark of the white pupils for all terms in science is 67, of the colored 61; and 29 per cent. of the colored group reach the median mark of the whites.

Table XX. presents all data on history and related subjects for all terms. Table XXI. gives the same data for the ancient languages—Latin and Greek.

The median mark of the white pupils in the study of history for all terms is 66, of colored 60; and 31 per cent. of the colored group reach the median mark of the whites.

The median mark of the white pupils in the study of Greek and Latin for all terms is 65, of the colored 60; and 27 per cent. of the colored group reach the median mark of the whites.

Table XXII. presents all data for all terms on the several commercial subjects—bookkeeping, stenography, business forms, and commercial law. There is no doubt considerable unlikeness in these subjects, but the meager data on any one of them suggested a single tabulation. We may also assume a like motive for successful study in the pursuit of each of them—their immediate applicability in business life.

The median mark of the white pupils in the commercial branches for all terms is 70, of the colored pupils 62; and 22 per cent. of the colored pupils reach the median mark of the whites.

The data given in Tables IX.–XXII. are summarized in Table

XXIII. It will be seen that practically all median marks lie in the range of the 60's, showing how the great body of pupils gravitate towards and a little above the passing mark.

TABLES XX–XXII

MEDIAN MARKS IN OTHER SUBJECTS

Measures	History All Terms		Ancient Languages All Terms		Commercial Branches All Terms	
	White	Colored	White	Colored	White	Colored
Below 20 ...	0	0	0	0	1	0
20– 24 ...	0	1	0	1	0	0
25– 29 ...	0	1	0	1	0	0
30– 34 ...	0	2	2	2	0	0
35– 39 ...	1	0	4	0	2	2
40– 44 ...	3	4	1	3	0	2
45– 49 ...	1	7	1	5	2	1
50– 54 ...	3	14	2	7	3	3
55– 59 ...	8	15	4	9	1	13
60– 64 ...	22	15	16	14	6	9
65– 69 ...	20	12	13	5	4	9
70– 74 ...	16	11	9	6	7	6
75– 79 ...	6	3	6	2	7	2
80– 84 ...	4	4	1	2	6	1
85– 89 ...	3	3	2	2	2	1
90–100 ...	0	0	1	0	2	1

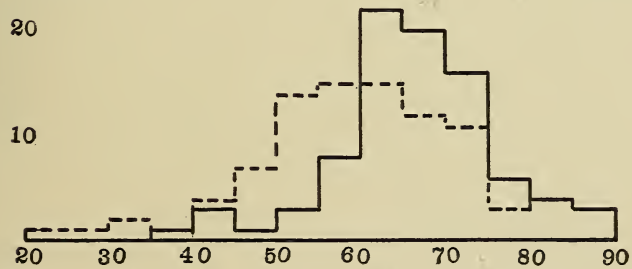

FIG. 12. Showing the Relative Attainment of the Two Groups in History for all Terms. (See Table XX.)

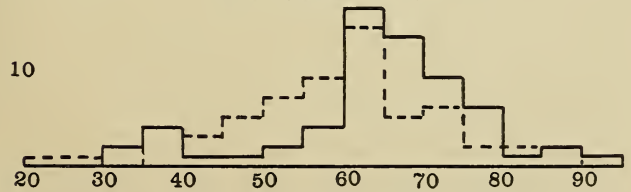

FIG. 13. Showing the Relative Attainment of the Two Groups in Ancient Languages for all Terms. (See Table XXI.)

FIG. 14. Showing the Relative Attainment of the Two Groups in the Commercial Branches for all Terms. (See Table XXII.)

It will be seen that the white pupils rank higher in every subject of study; but that the difference in standing, though present in every instance, is numerically not very great. If the actual difference between the two groups were too pronounced, it is evident that it would render impracticable all schemes of coeducation, which experience has shown not to be the case.

The colored pupils make relatively the poorest showing in English and the commercial branches; they make relatively the best showing in mathematics, especially arithmetic and algebra, and in the modern languages. Ancient languages, science, and history fall in between these in the order named.

Why the colored pupils do poorest work in English and best in mathematics would probably require a specific psychological study for its satisfactory determination. One might easily have supposed the reverse to be true. In fact this seems to be the popular impression. This view also has the sanction of scholars. Ratzel states regarding the negro that he "readily picks up foreign languages and learns to read in a short time."[1] Shaler also expresses this view of the negro, saying,[2] that he "has a remarkable aptitude for language. He quickly compassed the difficult English speech, and has effectively mastered it, so that he uses it with more ability than the peasant class of our own race. Elsewhere he has done the like with all the tongues of Southern Europe." Shaler further states[3] that "with rare exceptions his ability in the field of mathematics is far less than that of the Aryan and the Semite. . . . The mathematics which require constructive ability of the higher kind, as algebra and geometry, are generally beyond the capacities of this people." And yet the results of our study apparently quite reverse this position. And the data presented seem to be sufficient to place this conclusion almost beyond doubt. It may be that the negro, by apt imitation, is able to acquire easily a spoken language, while the written language,

[1] "The History of Mankind," Vol. II., p. 326.
[2] "The Neighbor," p. 153.
[3] *Idem.*, p. 151.

requiring more technical detail and a more exact understanding of form and structure, is somewhat baffling to him. It is a common observation that negroes associated with whites learn to speak their language with considerable fluency, but at the same time with gross inaccuracies. With limited observation and inquiry, I have not been able to discover that this observation is in any degree true of the spoken or written discourse of colored high school pupils.

It might be thought that poor culture in the homes of the colored pupils, where the parents have but a meager or no knowledge of the written language, and make but a very imperfect use of the spoken language, is largely responsible for the limited success of this group of pupils in the study of English in the high school. While this no doubt has its influence, it does not, however, seem to be fundamental, unless we could show that the poor speech in the home is due wholly to some other cause than that of an inaptitude for language training. As a matter of fact, the colored parent has probably had a better chance to learn the English language than the average white parent of the City of New York. Many pupils of the high schools being of foreign parentage do not hear English spoken in the home. And while members of colored homes are without books and without literary culture, we have no way of knowing that this is true to any greater degree of the homes of the colored pupils who come to the high school than of the homes of the whites. One might think that the taste of the colored pupils is more primitive, and that they do not consequently appreciate the refinements of English style. Whether anything like this might be true of high school English, we can not say. However it may be explained, it remains that the colored pupils do relatively very poor work in the English of the high school.

The two groups are most nearly on a parity of attainment in the study of first term mathematics. There is only one point of difference in the median marks, and 46 per cent. of the colored pupils reach the mark attained by 50 per cent. of the whites. Algebra seems, then, to be the subject in which the colored pupils are able to make the most favorable showing. Their relative standing in arithmetic is also high; but in geometry it is decidedly poorer. Only 26 per cent. of the colored pupils reach the mark in geometry attained by 50 per cent. of the whites. The modes of thought in geometry are evidently more difficult relatively for the colored pupils than are those of arithmetic and algebra. The observation has also been made that girls succeed relatively better with high school algebra than geometry, as compared with the work of boys.

After comparative success in manipulating the complicated sym-

bolism of arithmetic and algebra, we may wonder why the colored group does not attain a higher relative standing in the commercial branches. It has been seen that only 22 per cent. of the colored pupils reach the median mark of the whites in these branches—being the poorest relative attainment made with the exception of that in first term English. The manipulations of such a subject as bookkeeping are of course quite complex, and may be of relatively greater difficulty for the colored group. It may be also that the business ideas and concepts of this group are less clearly defined and less fully developed, which, if a fact, might be attributed either to present social conditions or to differences in race experience, or both. Very likely, too, the practical value of such training appeals less strongly to the colored pupil, so that his interest and effort are, in consequence, less actively aroused. In modern language study it is found that the colored pupils meet with relatively high success. This is in accord with the observation often made of their aptitude for language. Oral discourse may also be emphasized more in the study of a foreign language than in the study of English, and in this the race has shown a capacity to excel. In first term work, they rank, in modern languages, second only to algebra; and all marks considered, it is here that their rank is highest. (See Table XXIV.) Perhaps also it is in a study of foreign languages that the two races are most nearly on an equal footing. In this field the work is almost equally new and strange to both. But even here the linguistic development of white pupils, as influenced by race heredity, ought to be somewhat more in their favor.

In Latin and Greek, however, the standing of the colored group is again relatively poor. The reason may be found partly in the greater difficulty of the study of these languages, and partly in the social environment. These ancient tongues have so long been associated with learning and power both in church and state, that a sort of feeling of dignity and respect attaches to them that no doubt influences white pupils more strongly than it does the colored. Also as a preparation for college, these languages may make a stronger appeal to the interest of the white pupils.

In the sciences and history colored pupils meet, we might say, with about average success. The median mark in the sciences is the same as the median mark for all subjects; that in history is slightly higher. One might naturally have expected the colored pupils to have made a more favorable showing in history. It is quite common for writers on the negro race to express the view that colored pupils easily succeed with all subjects requiring memory. But their memory is probably not so far in excess of other capacities as has been

commonly supposed; and history, as now taught, makes a much wider intellectual appeal than to mere rote memory.

We have already endeavored to estimate the scholastic efficiency or ability of the white and the colored pupils by determining their average standing in all school subjects. We may further measure their relative scholastic efficiency by ascertaining what percentage the whole number of subjects passed by each group was of the whole number of subjects pursued. In other words, we may take the percentage of promotions as a measure of the school efficiency of the pupils. This is determining efficiency in scholastic achievement by the ability of a pupil to make such a mark in class work and school examinations as to justify a teacher in the belief that the pupil has a sufficient knowledge of a subject to entitle him to promotion or graduation. As already pointed out, only first trials in a subject are considered. The results obtained upon this basis are shown in Table XXIII.

TABLE XXIII

SHOWING NUMBER OF SUBJECTS PURSUED AND PERCENTAGE OF FAILURES BY TERMS AND BY YEARS

	White Pupils			Colored Pupils			
Intervals	No. Subjects	No. Failures	Percentage of Failures	No. Subjects	No. Failures	Percentage of Failures	Relative Efficiency of Colored
First term	665	148	22	662	232	35	83
Second term	505	130	26	488	200	41	80
First year	**1,170**	**278**	**24**	**1,140**	**432**	**38**	**82**
Third term	405	85	21	443	210	47	67
Fourth term	296	77	26	307	150	49	69
Second year	**701**	**162**	**23**	**750**	**360**	**48**	**67**
Fifth term	243	67	27	223	113	51	62
Sixth term	181	51	28	141	65	46	75
Third year	**424**	**118**	**28**	**364**	**178**	**49**	**71**
Seventh term	95	15	15	76	27	35	76
Eighth term	43	5	12	42	6	14	97
Fourth year	**138**	**20**	**14**	**118**	**33**	**28**	**84**
Totals	**2,433**	**578**	**24**	**2,382**	**1,003**	**42**	**76**

It will be seen that during the first year at high school a total of 1,170 subjects was pursued by the pupils of the white group, and that in 278 instances they failed of making the passing mark; that is, they failed in 24 per cent. of their studies. The corresponding figures for the colored pupils are 1,140 subjects, and 432 instances, or 38 per cent., of failure.

For the second year, the white pupils pursue a total of 701 subjects, and fail in 162 cases, making the percentage of failure 23.

The colored pupils pursue 750 subjects and fail in 360 cases, making the percentage of failure 48.

For the third year, the white group pursue a total of 424 subjects and fail in 118 cases, making the percentage of failure 28. The colored pupils pursue 364 subjects and fail in 178 cases, making the percentage of failure 49.

In the fourth year, the white pupils pursue a total of 138 subjects and fail in 20 cases, making the percentage of failure 14; the colored pupils pursue 118 subjects and fail in 33 cases, making the percentage of failure 28.

For the entire period of 4 years, the white pupils pursue a total of 2,433 subjects and fail in 578 cases, making the percentage of failure 24. The colored group pursue a total of 2,382 subjects and fail in 1,003 cases, making the percentage of failure 42.

During the entire period, in other words, the white pupils passed in 76 per cent. of all subjects pursued on first trial; the colored pupils passed in 58 per cent. of all subjects on first trial. If we take the achievement of white pupils on first trial as a basis, it will be found that the achievement of the colored pupils is about 76 per cent. of it. That is, on the basis under consideration, the efficiency of colored pupils in the high school of the City of New York, is about ¾ of that of the whites.

A comparative study of the mental ability of white and colored pupils by the methods of mental tests has scarcely begun, so that we are unable to check the reliability of our results, except in a very general way, by measurements which have been thus derived. A report[3] of a study of the learning of white and colored delinquent girls recently made by Bird T. Baldwin tends, however, even to accentuate the difference in learning capacity between the two racial groups as compared with the results which we have obtained. Professor Baldwin's study was based upon experiments with a substitution test, which were completed by groups of white and colored girls ranging between the ages of thirteen and twenty-one. Of the colored group he says: "The work of these girls is less in amount, less neat, and less accurate. The marks are more irregular, and many pay little attention to errors." Quoting further: "In this type of learning it is found that comparing the amount of work done by the thirty-seven white girls with the work done by thirty negroes who accomplished more than 50 per cent. of correct results, it is evident that the negroes are decidedly inferior. The white girls made 72.3 substitutions as a general average, the negroes 55.8. The negroes accomplished 62.4 per cent. as much work as the white girls, and made 245.3 per cent. as many errors."

[3] See *The Journal of Educational Psychology*, June, 1913.

These are about the only comparative results hitherto published of the mental capacity of two racial groups which have been obtained by means of mental tests. They correspond essentially with the results which we have obtained by a comparison of school work as indicated by teachers' marks. Estimates of racial ability made from observation are usually indefinite in character, and afford little basis for comparison with the measured results which we have obtained except in their general tendency. Perhaps the most interesting estimate based upon observation is that of the great English student of heredity, Sir Francis Galton, who, by use of the law of deviation from an average, has roughly compared the worth of the negro race relative to the Anglo-Saxon. Of his method Galton says: "To save the reader's time and patience, I propose to act upon an assumption that would require a good deal of discussion to limit, and to which the reader may at first demur, but which can not lead to any error of importance in a rough provisional enquiry. . . . There is good reason to expect that the error introduced by the assumption can not sensibly affect the offhand results for which alone I propose to employ it."[4]

Galton divides both races into sixteen grades of ability, eight falling above and eight below the racial mean, and assumes the interval of ability separating these grades to be equal in all cases. The individuals of both races are supposed to be distributed through the grades in accordance with the law of deviation from an average. Galton then considers the ablest representatives of the negro race, as Toussaint l'Ouverture, ranking as one in a million, and regards them as falling not less than two grades below the corresponding representatives of the Anglo-Saxon. Of men surpassing L'Ouverture's ability there are fifteen among a million of Anglo-Saxons. Similarly each grade of ability among the Anglo-Saxons is regarded as falling at least two intervals above the corresponding grade among the negroes. This distribution results in a much smaller degree of over-lapping in ability than that which was obtained by a comparison of school marks. Only 16 among a hundred negroes would rank in ability equal to or above the median of the Anglo-Saxons, as compared with 29 out of a hundred among the high school pupils of New York City. This discrepancy, however, may be largely explained by a consideration of the differences in the groups compared—the groups which we have studied being far more select and specialized by the operation of several obvious influences. Another slight source of error may be found in the assumption of equal variability between the two races. Of this Galton himself remarks: "I

[4] "Hereditary Genius," p. 337.

know this can not be strictly true, for it would be in defiance of analogy if the variability of all races were precisely the same." It thus appears that these estimates of racial ability derived from observation and from a comparison of school efficiency do not vary widely from each other.

To summarize, the following are the leading results deduced from the data considered:

The median age of white pupils at the time of entering high school in the City of New York is 14 years 6 months; of colored pupils 15 years 1 month—a difference of 7 months. The average deviation for whites is 9 months; for colored, 15 months. Twenty-seven per cent. of the whites are as old as the median age of the colored or older.

Colored pupils remain in school a greater length of time than do the whites. For the cases studied, the average time spent in high school for white pupils was 3.8 terms; for colored, 4.5 terms. About 28 per cent. of the whites attain the average time of attendance for the colored.

Considering the entire scholastic record, the median mark of the 150 white pupils is 66; of the 150 colored pupils, 62; a difference of 4 per cent. The average deviation of white pupils is 7; of the colored 6.5. Twenty-nine per cent. of the colored pupils reach or surpass the median mark of whites.

TABLE XXIV

PERCENTAGE OF COLORED PUPILS REACHING THE MEDIAN MARK OF WHITES

Subjects.	Per Cent.
English—first term	22
English—all terms	24
Modern languages—first term	42
Modern languages—all terms	33
Mathematics—first term	46
Mathematics—all terms	32
Sciences—first term	39
Sciences—all terms	29
History—all terms	31
Ancient languages—all terms	27
Commercial branches—all terms	22
Arithmetic—first term	39
All subjects—all terms	29

The white pupils have a higher average standing in all subjects. The results are summarized in Table XXIV. The percentage of colored pupils reaching the median mark of the whites in the several subjects is as follows: Modern languages, 33; mathematics, 32; history, 31; the sciences, 29; Latin and Greek, 27; English, 24; the commercial subjects, 22; and all subjects together, 29.

The total number of subjects pursued by the white group was 2,433; the total number of subjects passed on first trial was 1,855; the percentage of subjects passed being 76. The total number of subjects pursued by the colored groups was 2,382; the total number of subjects passed on first trial was 1,379, the percentage of subjects passed being 58. Interpreting these figures as a measure of relative scholastic efficiency, the efficiency of colored pupils is 76 per cent. of that of the whites; that is, the colored pupils are about ¾ as efficient as the whites in the pursuit of high school studies.

CHAPTER V

The Educational Significance of the Data

The facts set forth in the preceding chapter are of great significance from the point of view of instruction and from that of educational administration and expenditure. The problem of the backward pupil presents grave difficulties both in class-room instruction and in school organization. Also the expense to the community of schooling any pupil up to any definite standard of scholarship increases directly with retardation. The facts make it plain that the burden of education falls much more heavily upon those communities having a large proportion of colored population.

It has been shown that the average of the white pupils in all subjects taught in the high schools of New York City is 66, and of colored pupils, 62. The average deviation of the white pupils was 7, and of colored, 6.5. If we assume the distribution of pupils by marks to be about that of the normal surface of frequency, we will have 25.28 per cent. of the white group between the passing mark 60 and the average 66, and 9.73 per cent. of the colored group between the passing mark 60 and their average 62. That is, 75.28 per cent. of the white group are up to or above the passing mark, as compared with 59.73 per cent. of the colored group. According to these estimates about 75 out of 100 white pupils attain promotion as compared with 60 out of 100 colored. Retardation would thus be 25 per cent. and 40 per cent., respectively, for the white and colored groups.

It is plain, then, that if an attempt were seriously made to bring the scholastic training of the colored pupils throughout the country up to the present standards of the schools, its accomplishment would require a considerably increased outlay both of time and of money. The expenditure under the most favorable circumstances would probably be on an average not less than a fourth or fifth greater per unit of colored population,—even if no allowance were made for diminishing educational returns, a factor which also would doubtless have to be taken into account.

The figures of Table XXIII. indicate that the work grows somewhat more difficult for the colored pupils as the high school course advances. The third year seems to increase in difficulty for the whites also. The percentages of failure for the successive years of the high school are as follows: first year, colored, 38, white, 24; second year,

colored, 48, white, 23; third year, colored, 49, white, 28; and fourth year, colored, 28, white, 14. For both groups the smallest percentage of failure is in the last year. This is no doubt due in part to a closer selection of pupils, and perhaps in a measure to the greater leniency of teachers in the final year.

The reports of superintendents of numerous city schools in the various Southern States, where separate schools for the two races are maintained, go far towards establishing the proposition that the slower progress of colored pupils, which is clearly indicated in our tables, is of general occurrence. These reports show that the average age of the colored pupils of any grade is always considerably higher than the average age of white pupils of the same grade. They also show that the percentage of colored pupils is relatively greater than the white in the lower grades, and relatively less in the upper grades. Thus, in the first and second grades, the percentage of colored pupils is in excess of the white; in the third or fourth, it becomes about the same; while in the higher grades the relative percentage of white pupils is always greater.

TABLE XXV

FROM THE ANNUAL REPORT OF THE HOUSTON (TEXAS) PUBLIC SCHOOLS FOR 1909–1910, P. 96

Showing the Distribution of Pupils through the Grades by Per Cents.

	No. Whites	Per Cent Whole	No. Colored	Per Cent. Whole
First grade	1,528	18.0	1,131	31.7
Second grade	1,314	15.5	756	21.2
Third grade	1,317	15.6	542	15.0
Fourth grade	1,185	14.0	391	10.9
Fifth grade	865	10.2	299	8.0
Sixth grade	750	9.0	201	5.6
Seventh grade	559	6.6	106	2.9
Eighth grade	479	5.6	75	2.1
Ninth grade	207	2.4	31	.9
Tenth grade	139	1.6	23	.6
Eleventh grade	84	1.0	10	.3
Totals	8,427	100.0	3,565	100.0

A few tables are selected from city school reports as typical of these conditions. Table XXV., taken from the annual report of the Houston, Texas, public schools for the scholastic year 1909–1910, gives the distribution by grades of 8,427 white and 3,565 colored pupils. Nearly a third of all the colored pupils as compared with a fifth of the white are in the first grade. Sixty-two per cent. of the colored as compared with 50 per cent. of the white are found in the first three grades. The proportion of white to colored pupils in the high school grades is as three to one.

Table XXVI., taken from the report of the Board of Education of Washington, D. C., for the year 1906–1907, shows the distribution of the pupils of the city schools for that year by grades. Nearly a fourth of the colored pupils are in the first grade as compared with a seventh of the whites. Fifty-one per cent. of the colored are found in the first three grades as compared with 37 per cent. of the whites. In round numbers, the distribution of the two groups through the city schools was as follows: Kindergarten, colored, 5 per cent., white, 4 per cent.; primary grades, colored, 62 per cent., white, 50 per cent.; grammar school grades, colored, 26 per cent., white, 36 per cent.; secondary schools, colored 6, white 10 per cent.

TABLE XXVI

FROM THE ANNUAL REPORT OF THE WASHINGTON (D. C.) PUBLIC SCHOOLS FOR 1906–1907, P. 35

Showing the Distribution of Pupils through the Grades by Per Cents.

	No Whites	Per Cent. Whole	No. Colored	Per Cent. Whole
Kindergarten	1,453	4.11	942	5.42
First grade	5,060	14.31	4,138	23.81
Second grade	4,199	11.88	2,518	14.48
Third grade	4,160	11.77	2,199	12.65
Fourth grade	4,245	12.00	1,988	11.44
Fifth grade	3,980	11.25	1,621	9.33
Sixth grade	3,436	9.72	1,232	7.09
Seventh grade	2,863	8.10	964	5.54
Eighth grade	2,453	6.94	683	3.93
High school	2,764	7.82	587	3.38
Manual training high	612	1.73	418	2.40
Normal school	131	.37	93	.53

The report of the public schools of Memphis, Tennessee, for the scholastic year 1908–1909 gives the distribution of 9,226 white and 5,301 colored pupils both by grades and by ages. The average ages of the white and the colored groups in the first grade are, respectively, 7.4 and 8.2 years; in the second grade, 8.7 and 10.4 years; in the third grade, 10.0 and 11.6 years. The difference in average age is more than a year in each grade. The relative percentages of the entire groups which were in the different grades are for white and colored respectively: first grade, 25 per cent. and 44 per cent; second grade, 11 per cent. and 17 per cent.; third grade, 14 per cent. of each; fourth grade, 13 per cent. and 9 per cent. In the advanced grades the relative percentage of the white pupils predominates.

These figures seem to be more or less typical of the educational situation. The relative percentage of colored pupils predominates in the lowest grades, becomes equal to that of the white pupils in the

third or fourth grade, and is relatively less in the more advanced grades. The condition is apparently of general occurrence so that inefficiency in the work of the colored schools seems everywhere prevalent. This is shown both by the fact of the greater average age of the colored pupils, and by their greater relative percentage in the lower grades.

TABLE XXVII

CONDENSED FROM MEMPHIS SCHOOL REPORT FOR 1908–1909, P. 23

Showing the Distribution of Pupils by Per Cents. and by Ages through the Grades

	White			Colored		
	No.	Per Cent.	Av. Age	No.	Per Cent.	Av. Age
First grade	2,261	25	7.04	2,328	44	8.2
Second grade	1,056	11	8.7	9,909	17	10.4
Third grade	1,258	14	10.0	776	14	11.6
Fourth grade	1,167	13	11.1	465	9	12.4
Fifth grade	838	9	12.0	288	5	13.3
Sixth grade	816	8	12.8	209	4	14.1
Seventh grade	627	7	13.8	134	3	14.9
Eighth grade	477	5	14.6	71	1	15.7
Freshman	429	8	15.0	68	3	16.0
Sophomore	170		15.5	—		—
Junior	91		16.3	21		17.0
Senior	36		17.0	32		18.0
Total	9,226	—		Total .. 5,301	—	

Also when the degree of mental development of pupils of nominally the same school grade is tested, the white pupils are found to make a more favorable showing. Very little work, however, of this sort has hitherto been done. In a preliminary report[1] of a comparative study by Miss Alice Strong of 119 white and 120 colored pupils in the public schools of Columbia, S. C., it was found by means of the Binet tests that, in their mental growth and development, 25.2 per cent. of the white and 60.8 per cent. of the colored were below age; 42.9 per cent. of the white and 30 per cent. of the colored were at age; and 28.6 per cent. of the white and 9.2 per cent. of the colored were above age. "From another point of view," the report says, "it appears that for the colored 60 per cent. of the tests are too difficult; 20 per cent. too easy; and 20 per cent. right. For the white 25.7 per cent. of the tests are too difficult; 25.7 per cent. too easy; and 48 per cent. right."

When mental tests are thus applied to groups of pupils of the same grade, it appears that the white pupils have made more satisfactory attainments. Whether measured by teachers' marks, or by

[1] *Journal of Educational Psychology*, June, 1913.

mental tests, or by their distribution through the grades by ages or per cents., the relatively slow progress of the colored pupils seems to be the constant result.

In part explanation of this situation may be adduced the fact that the colored schools are much inferior in organization, administration, and equipment. Teachers are poorly paid, are insufficient in numbers, are not well trained for the service, and are lacking in many of the facilities for successful work. These are mere externals, however, for which remedies may be easily provided. We are prone to attribute too large a part of our educational failure to their existence, and are disappointed with our small improvement in results when they are removed. It has been shown that the external circumstances play a relatively smaller part, and heredity a relatively greater part, in individual development and efficiency, than was formerly supposed. Genius, mediocrity, imbecility, are fundamentally matters of birth, and not of education or training. Another great drawback to the teacher's work, it may here be pointed out, is that the social and economic ideals of the colored race are not such as to inspire effort and perseverance in the acquisition of knowledge. It would thus seem that the weight of both physical and social heredity falls heavily upon the teacher's hands. If under the most favorable circumstances, and with a relatively close selection of pupils, we meet, as our study has shown, with serious retardation in the education of the colored race, this fact ought to serve to show how great the burden is which rests upon many communities in training this element of their citizenship for social, civil, and industrial efficiency.

CHAPTER VI

Conclusion

It has already been stated that one of the main objects of this study of racial groups of high school pupils was to compare the results of mental work done under like circumstances of age, environment, and previous training, to see what bearing they might have upon the question of racial mental differences. It is understood that such differences are differences of degree and not of kind. Mental differences between races, as between individuals, are quantitative, not qualitative. The fundamental likeness of the minds of all human groups is assumed. The unity of the human species is an accepted doctrine of modern anthropology. Everywhere man possesses the essentially human mental traits of abstract ideation, articulate speech, reasoning, imagination, and artistic creation.

The human species is separated into several well-marked physical types, or races. Keane says: "The four main divisions of mankind are thus seen to have been evolved independently in their several zones from four Pleistocene ancestral groups of somewhat uniform physical type, and all sprang from a common Pliocene prototype."[1] We assume then, in accordance with the teachings of present day anthropology, that all these types have descended from a common ancestral stock; and, in accordance with the laws of heredity, have departed from this ancestral stock more or less widely under the influence of environment and the principles of survival. The essentially human instincts and capacities, acquired already by the common progenitor, have been preserved in all the races, and constitute their specific mental likeness and unity. Such deviations in physical features and mental traits as have been brought about by the influence of widely different geographic conditions, acting upon a modifiable heredity through geologic epochs of time, constitute their racial differences. Those groups most nearly allied in physical and mental traits are probably more recent differentiations of type, and may represent secondary, or even more diverse, branchings from the primitive parent stock.

It is not possible that any one of the races has remained on the level of development of the original type. Evolution, adjustment, progress is the law of life of species. Races either developed or

[1] "The World's People," p. 5.

disappeared. Neither would it be safe to assume that different human groups have developed, under the stimulus of widely different environmental conditions, either in the same direction or at the same rate. So different are the conditions of contour, soil, and climate, and all the other local agencies that are known to affect the evolution of species and types that it would be contrary to all analogy were there not found to be considerable diversities in both the bodily and mental constitution of the races of men. Also it is entirely probable that each race has progressed farther than any other, from the original human prototype, along the lines of its own peculiar development. Racial diversities, rather than uniformities, are what the laws of heredity and evolution would naturally lead us to expect.

Now if the races constitute a single zo-ological species, and have descended from a common progenitor in accordance with the same biological laws, the question arises as to whether or not they have arrived at the same plane of evolutionary bodily and mental fitness. In the processes of evolution that have brought about wide divergences in physical type, have such intellectual changes transpired as would justify the conclusion that the races are on mentally different levels of development? As Brinton puts the question, "Are there psychological distinctions separating the sub-species of man as clearly as those of his physical economy?"[2]

The relative mental capacity of races, is a question that has long been of absorbing interest. Whether or not there is essential intellectual equality or inequality among them, is in reality a problem as yet unsolved. The present chapter will attempt a brief survey of the existing status of our knowledge upon this subject, with a statement of the view to which the data presented in this study is thought to point.

There can be no doubt that the contributions which the races have made to human progress and culture have differed greatly. The history of civilization is the history of relatively few peoples. But two very different factors may evidently have shared in effecting this result: environment and heredity. Has then this difference in the rate of social development been due to differences in external stimuli, or to differences in internal capacity for response? This is a question on which there is still a diversity of opinion.

Plainly the external factor can not be overlooked in any satisfactory consideration of a people's growth. Nothing can be more certain than that the progress which a nation makes in social evolution is due in a very large measure to its geographic environment. The broad and fertile valleys of the Tigris, Euphrates, and Nile undoubt-

[2] "The Basis of Social Relations," p. 157.

edly bore a close relation to the early rise and progress of civilization in those regions, and the rapid development of modern civilization has a geographic basis in soil, climate, and natural resources, in the absence of which it could not be explained. Certainly a sufficient reason for differences in the degree of progress made by different human groups may often be found in geographic conditions, even were the capacity for inward response supposed to be the same. But the existence of this fact neither proves nor disproves that different races may be gifted differently with natural hereditary endowments. Under the influence of more or less favorable environments, equal progress may have been made by races differing widely in capacity, and races not differing in capacity may have attained to very different degrees of civilization and culture. It is not safe to pass judgment upon the intellectual capacity or possibilities of a race or people merely from a consideration of the position which it has attained in the scale of social progress.

To determine whether the races of men do actually differ in the possibilities of mental development which are transmitted to them by physical heredity is quite a complicated problem. It amounts to determining whether or not they have arrived at the same level, not on the scale of culture, but on the scale of organic and mental evolution; and if they are on the same level of evolution, but on slightly different lines of development, whether or not their respective lines of development are equally favorable to efficiency and survival in the modern civilized world.

It may here be said that the weight of authority among anthropologists has hitherto been on the side of an inequality in the degree of evolution and in the inheritance of native capacity among the races. Even Waitz, who advocated so strongly the specific unity of the human mind said, "The proposition has been often defended, that there were no differences whatever in the mental endowment of races, that mental dispositions . . . are alike in all races, that their development depended entirely on surrounding nature and on education. . . . But the failure of attempts to educate the little children of some savages proves, at any rate, that there is no absolute equality of mental disposition either among peoples generally, or among individuals of the same people."[3] Haddon says: "The three great groups of mankind—the white, yellow, and black races—all probably are divergences from the same unknown ancestral stock. They have severally specialized along different lines of evolution, and different traits of their organization have specialized in different degrees and in different directions. . . . Of course there can be no doubt that

[3] "Anthropology," Vol. I., p. 321.

on the whole, the white race has progressed beyond the black race."[4]

Authorities could easily be multiplied who regard racial differences in mental traits as founded upon differences in organic or physiological evolution. Weighty authority may, however, be cited with quite a different view. Ratzel says: "It may be safely asserted that the study of comparative ethnology in recent years has tended to diminish the weight of traditionally-accepted views of anthropologists as to racial distinctions. . . . It is civilization alone which can draw any boundary between us and the 'natural' races. We may declare in the most decided manner that the conception of 'natural' races involves nothing anthropological or physiological, but is purely one of ethnography and civilization. Natural races are races poor in culture. The gap which differences of civilization create between two groups of human beings is in truth quite independent of differences in their mental endowments."[5] To the same effect Professor Thomas says: "The fundamental explanation of the differences of the mental life of two groups is not that the capacity of the brain to do work is different, but that the attention is not in the two cases stimulated and engaged along the same lines. . . . Of two groups having equal mental endowment, one group may outstrip the other by the mere dominance of incident. . . . The most significant fact for white development is the emergence among the Greeks of a number of eminent men who developed logic, the experimental method, and philosophic interest, and fixed in their group the habit of looking behind the incident for the general law."[6]

It is therefore plain that so far as scholarly authority is concerned, there are two very different views as to the real cause of the difference in progress made by races and peoples in different quarters of the globe. The older anthropologists, as well as many of those of the present day, hold to the view of the substantial inequality of races, as of individuals, in hereditary mental endowments; while many other serious thinkers of the day affirm, with apparently equal assurance, the essential equality of the races in hereditary mental gifts, holding that whatever differences are manifested in mental capacity are attributable solely to inequality of opportunity.

Now there can be no doubt about the inequality of opportunity or about its marked effect upon the progress of individuals and peoples. But to establish this latter position, it would be necessary not only to show that it is sufficient to account for all the facts in the mental life of peoples, but also to give some positive evidence that

[4] "The Study of Man," p. xxii.

[5] "History of Mankind," Vol. I., pp. 18–19.

[6] "Source Book of Social Origins," p. 169 et seq.

mental inequality actually does not exist among them. This latter requirement is not met with. There is no proof, in the case of differences in the mental life of two human groups, that the capacity of their brains to do work is not different. True the situation may be explainable as due to the "dominance of incident." It is possible that in many cases it is due to this cause alone—to the accidents of history and to favorable peculiarities in the physical and social environment—but the possibility of the operation of the other cause is ever present. We do not believe that any one would attempt to explain the sudden development of so much that is extraordinary in the science, art, and philosophy of the ancient Greeks without assuming the appearance among them of a considerable number of persons of that high order of ability known as genius; and a genius is a person favored by heredity with a brain capable of doing extraordinary work. It is the internal factor of heredity, not the external factor of environment, that constitutes his distinguishing trait. Of course the external factor is not to be ignored. Incident, the favorable combination of external circumstances, no doubt plays an important role in all superior human achievements; but there is an internal factor, an inherent capability of response, without which these high endeavors do not admit of explanation.

Also the fact that the attention of a people is directed and engaged along certain lines, while in a way due to accident, is not unrelated to its inward capacity for response. The direction of a people's attention and effort is certainly as much a matter of internal organization as it is of external circumstance. That a habit of looking behind the incident for the general law may be ingrained in a people seems in itself significant for that people's inherent aptitude. History can not be completely explained in terms of geographic causation. It is indeed the subjective factor—though it too has perhaps been often overemphasized—to which many writers have attributed the scientific ascendency and political dominance of a few peoples in the world.

It seems quite clear, then, that the fact that different rates of human progress and different degrees of civilization may be explained without the assumption of the mental inequality of different races and peoples does not prove such inequality not to exist. But we may fall into the opposite error of supposing that those peoples who lead in civilization and culture are for that reason peoples of superior mental abilities. This also does not of necessity follow. The fact of superior culture may be due solely to a difference in opportunity, and not at all to superior endowment. It is possible that a people may pass from barbarism to culture without increasing in the least its hereditary mental aptitude.

What then are the facts on which the anthropologist has endeavored to base a distinction of races in mental ability? First of all, on physical features, and often too, on features that bear but the remotest relation to the mental life. Several physical features of the negroid races have been pointed out as approximating them more nearly to the ape in both form and faculty. But the investigator has almost always approached this problem with a belief in the superiority of his own physical and mental type; and any obvious departure from this type as a standard has been adjudged as evidence of inferiority. The assumption here is essentially faulty. As Professor Boas puts it: "It seems reasonable to assume that differences in the form of the body must be accompanied by differences in function, and we may suppose that there may be certain peculiarities in the general mental tendencies of each race. Only we must guard against the inference that divergence from the European type is synonymous with inferiority."[7]

But the anthropologist has cited other facts which apparently have a more direct bearing upon the subject of mental inequality. The brain-weight of the various races has been subjected to numerous measurements, with the result that important racial differences seem to appear. A relatively small brain-weight is found to be characteristic of the negroid races, and a relatively great weight of the white race, even when all other facts are taken into consideration. Now it has been found that while no certain correlation can be affirmed between the size of the brain and the degree of intelligence in individual cases, yet when large groups are considered some significance for intelligence does seem to attach to the matter of size. Imbecility and idiocy are associated with small brains, while the brain of eminent men has been shown to be considerably larger on an average than that of members in general of their group. No one fails to overlook the relative size of the brain in explaining man's superior place in the scale of intelligence; and this difference in brain weight of different human varieties at least in itself suggests a probability of mental inequality.

It is believed, however, that a far more significant factor in determining the value of the brain as a psychic organ is its minute structure and organization. In the ascending scale of animal intelligence we find not only an increasing relative size of the nervous system, but also an ever increasing complexity in its organization. If there is a real difference in the mental capacity of races it is probably to be explained in the main by differences of this character. That there are such structural differences has long been the teach-

[7] "Anthropology," p. 15.

ing of traditional science. Mandsley holds[8] that an examination of the different races of men shows a clear correspondence between intelligence and the development of the cerebral hemispheres, and that the intellectual difference between the negro and European is accompanied by differences in the extent of surface and in the structure of the brain cortex. Quaterfages regards[9] it as a well-established fact that the number and complexity of cerebral convolutions are less in savage than in civilized races.

But one can hardly escape the feeling that the conclusions of the older anthropologists were unconsciously influenced by the white man's prejudices, and one would gladly see the facts ascertained by the cruder means of their day retested by the more refined and precise instruments and methods of the modern laboratory. One, therefore, naturally looks with expectancy towards the results of two important studies along this line recently pursued by trained scientists in the laboratory of anatomy at the Johns Hopkins University. From a study of the brains of 103 negroes and 49 American whites, Robert Bennett Bean reached the following conclusion:[10] The brain-weight of the negro is demonstrably smaller than that of the Caucasian; the size and shape of the front end of the brain are different in the two races, being smaller and more angular in the negro; the convolutions of the Caucasian brain are more elaborate, the fissures deeper, and the relative amount of white matter greater; the front end of the corpus callossum, made up of fibers which connect and associate the functions of the frontal lobes of the two hemispheres, is relatively greater in the Caucasian.

A like study following close upon that of Dr. Bean was made by Franklin P. Mall. Professor Mall reaches no such positive conclusions and expresses no such confidence in his results as does Dr. Bean. He found that on the average the relative percentage of the frontal lobe is the same in both races, and says that, with our present crude methods, any claim that the negro brain is more simian or fœtal than that of the white is entirely unwarranted. He finds that no necessary connection has been established between high intelligence and the brain's richness in gyri and sulci, and doubts our ability, with the methods and means at our disposal, to find any anatomical basis for great mental ability. He says: "For the present the crudeness of our method will not permit us to determine anatomical characters due to race, sex or genius and which if they exist are completely masked by the large number of marked individual varia-

[8] "The Physiology of the Mind," Ch. II.

[9] "The Human Species," p. 406.

[10] See *Century*, September, 1906.

tions. . . . Arguments for differences due to race, sex and genius will henceforward need to be based upon new data, really scientifically treated and not of the older statements.''[11]

This latter view brings into question, and no doubt deservedly, the accuracy and correctness of many of the conclusions of the older physiologists and anthropologists regarding anatomical differences between races. Whether the older views are entirely without value, however, must naturally remain for the present an open question. The cerebral differences between negroes and whites in the cases studied at Johns Hopkins have no doubt been greatly obscured by the fact of race mixture—the negro being a mixed and not a pure type—and by the fact of wide variation within both races, necessarily resulting in considerable overlapping between them; but it is also true no doubt that these differences have been greatly exaggerated in the past. That such differences, however, which have been so often asserted and reiterated by numerous investigators should be absolutely without foundation seems hardly credible.

Another important order of facts, which appears to have a significant bearing upon the subject of racial mental differences, is found in connection with the growth and maturing of individuals of different races. Early maturity is known to be related to climate, but it seems also to be related to race. Deniker[12] says that there is abundant evidence that negroes attain their maximum height between eighteen and twenty-one, while men of the white race have scarcely attained the limit of their stature at twenty-three. The negro would thus appear to arrive at bodily maturity two or more years earlier than the white. This fact of earlier maturity seems to apply with special reference to the cranium. The sutures of the skull are simpler in the negroid races, and are obliterated by the growing together of the bones earlier than is the case with the European. This premature formation of a solid and compact wall about the brain has been held by anthropologists to affect its growth and to afford some explanation of its smaller size in the negroid races. It is further pointed out by anthropologists that the anterior sutures of the skull are first to close in the negroid races, a condition the reverse of what obtains in Europeans. If this be true, the front portion of the brain, which is thought to be concerned with the higher mental functions, would appear to be the part whose expansion and development are most affected by this early solidification of the cranium. The skull of the negro, like that of many European whites, is dolicocephalic; but the lengthening is said to be occipital, rather than

[11] *The American Journal of Anatomy*, Vol. IX., No. I., p. 32.

[12] ''Races of Men,'' p. 107.

frontal, "indicating a preponderance of the lower mental powers."[13] Ratzel, describing the head of the negro, says: "The greatest breadth is to the back, so that seen from above it is egg-shaped, with the small end to the front. The forehead is often well arched but retreating, so that the broad brow of the thinker is impossible."[14]

Apparently correlated with these facts of physiological growth are certain important observations on the education of the children of different races. Tylor says: "The account generally given by European teachers who have the children of lower races in their schools is that though they often learn as well as white children up to about 12 years old, they then fall off, and are left behind by children of the ruling race."[15] Describing the psychological characteristics of African natives in the Banana zone, Dowd says: "The negro brain develops more rapidly and matures earlier in this, than in any other zone, and certainly earlier than the brain of the white man anywhere . . . The children of this zone, as of lower races generally, are remarkably precocious and when taught in school by the side of white children, often surpass them up to the age of puberty. At this period the negro . . . finds it difficult to keep up interest in lines of study which require the inhibition of other interests. . . . Waitz thinks that this arrest of mental growth is due to the climate and not to race characteristics, since the same phenomenon is observed among the Nubians, Egyptians, and Sandwich Islanders. The reply to such argument is that the climate has produced the race characteristic."[16]

Observations of this character are widely scattered through both popular and scientific literature. The children of all alien peoples, it is claimed, often show a capacity to assimilate European ideas quite equal to that of children of European parentage; but on arriving at the pubertal stage, their progress as often seems to be interrupted and they fall thereafter behind their white competitors, who at this period of life experience a great expansion and development of their mental powers.

The foregoing statements regarding the physiological growth and maturity of individuals of different races will doubtless have to be subjected to the more rigid tests of present-day scientific methods before it can be known just what measure of truth and error they contain. But it is hard to escape the conclusion that they are not without some basis in fact. It must be noted, however, that so far as school reports bear on the matter, there is no indication of any

[13] Brinton, "Races and Peoples," p. 21.
[14] "History of Mankind," Vol. II., p. 317.
[15] "Anthropology," p. 74.
[16] "The Negro Races," Vol. I., p. 360.

period during which the progress of colored pupils in American schools equals or surpasses that of the whites. The contrary seems to be true. The colored pupils are shown to do relatively poorer work in all grades of the school course.

Also in themselves, and apart from any other considerations, we might not be able to state the bearing of the foregoing observations on physical and mental development upon the question of racial mental differences. Professor Boas thinks that even a shorter period of reaching maturity as in the case of the negro or other races may be without significance. He says: "We have not even evidence that would prove that a shorter period of development must be unfavorable in its results."[17] But this is contrary to our current scientific and educational doctrine regarding human educability and the lengthened period of infancy and youth. Oppenheim states that "the higher the organism the longer does it require to attain a full development of its capabilities."[18] The importance of the lengthened period of infancy in human and animal evolution, making possible a period of learning and of profiting from individual experience, is a fully recognized biological principle. Time is a fundamental requisite in the development of any of the higher forms of life—on the physiological side, for the maturing of a complex but highly plastic neuro-muscular organism, and on the mental side, for the assimilation of a knowledge of the complicated details of the environment to which it must react. Certainly the burden of proof ought to be upon those who make the contrary contention, and the evidence must show that the shorter period of attaining to physiological maturity in a race is not in any way unfavorable in its results. Donaldson, speaking of the different ages in individuals and classes at which the brain ceases to grow, expresses the opinion that "we might fairly expect that it would be continued for the longest time in those most favored."[19] He also thinks that the investigations of Venn on the cranial growth of Cambridge students point in this direction. A longer period of attaining maturity would seem to mean a longer period of plasticity and educability. It would seem to indicate in both individuals and races a capacity for adaptation to a higher and more complex environment.

Of two races, differing materially in the period of growth, it would seem natural to infer that the one whose growth continued longest would be capable of a higher and wider mental adjustment, and would possess greater possibilities of advancement and culture.

[17] "The Mind of Primitive Man," p. 269.
[18] "The Development of the Child," p. 207.
[19] "Growth of the Brain," p. 111.

The opinions expressed in connection with attempts to educate alien races tend to confirm this view. Though based upon observation, these opinions, it would seem, can not be wholly without validity. Up to the age of puberty, the progress made by different races is reported to be largely the same. If there is at this point a falling off in the capacity of certain races in mental ability, we should expect to find it correlated with some sort of physiological change. Donaldson says: "It is to be anticipated that one great difference in races will be found to lie in the extent of growth and organization in the nervous system after birth, and especially after puberty. Should it turn out on further examination that some of the lower races lose their capacity for later training after adolescence, we should look with interest for the changes in the cerebral cortex in order to determine whether growth there practically ceased at puberty."[20]

Though our knowledge of cerebral anatomy is yet far from a solution of so refined a problem as this, still considerable progress in this direction is being made. "Kaes believes that in the second and third association layers of Meynert he has found the part of the brain in which, during the progress of civilization, improvement especially occurred. It is certainly suggestive that the areas which he thinks are preeminently the region of race cerebration coincide with those in which he also seems to have discovered a new growth of association fibers, beginning in civilized boys and girls at about eighteen years of age. Both Kaes and Vulpius agree that these same second and third layers, which the former is convinced are deficient among primitive peoples in association fibers, are undeveloped in children."[21]

Observations of this sort regarding cranial growth and structure, if verified, would afford a physiological basis and explanation for the great expansion of mental powers in white children during the adolescent period, and for the cessation of mental development said to be met with in certain other races. From the point of view of evolution, such differences are not at all unexpected. Although the races are supposedly descended from a common progenitor, their physical traits have been so profoundly modified by the action of the environment and of heredity that the growth and development of so important an organ as the brain could hardly have escaped their transforming influence.[22] In fact it is the nervous system that must have undergone the most significant changes during the period of purely human evolution. For evolution in man has been characterized by

[20] "The Growth of the Brain," p. 349.

[21] Swift, "Mind in the Making," p. 221.

[22] See Morris, "Man and His Ancestor," Ch. X.

mental rather than by physical adjustment, and real advance has been for the most part along the line of perfecting the brain as an organ of thought. As the higher mental functions were man's latest acquisitions, it naturally follows that the final steps in his organic evolution were the growth and development of those finer neural processes and structures on which these mental functions depend. As the several races developed separately under the influence of widely different environments, it would be miraculous to expect their mental or physical evolution to be precisely the same. If different environments made different demands upon the intelligence of the inhabitants to meet the conditions of existence—and no other assumption seems reasonable—then peoples with different orders of intelligence unavoidably arose. Not only then does it seem admissible to assume the existence of mental inequality between the races to account for various facts in our human relationships, but it would seem that apriori considerations, in view of our knowledge of human evolution, would make no other assumption tenable. Moreover it is naturally to be expected that when our methods and tests are sufficiently refined to enable us to discover the minutest differences, it will be found that it is in these higher and more recently acquired mental capacities that races will most likely exhibit the greatest diversities.

But just what the mental differences between races are can be ultimately determined only by some appropriate means of accurately measuring mental functions. Some objective and reliable way of making mental measurements must first be found. Until recently our knowledge of racial mental differences was based either upon mere observations of the behavior of individuals, or upon a comparative study of their relative achievements in the various fields of human activity. But judgments from mere impressions are inadequate to the demands of science, and are often found to be entirely erroneous. Real progress can be made in this field only by a direct application of psychological tests or some other method of actually measuring mental phenomena. Quantitative studies of mental processes have been actively pursued since the days of Fechner and Helmholz, and their methods have been applied in a few important instances to a comparative study of the minds of races.

The most noteworthy movement of this sort was the Cambridge Anthropological Expedition made in 1891 for the purpose of studying by the methods of experimental psychology the mental characteristics of the natives of the Torres Straits and the Fly River district of British New Guinea. This part of the work of the expedition was in the hands of three trained psychologists: W. H. R. Rivers, C.

S. Myers, and W. McDougall. Various experiments and measurements were made on vision, hearing, smell, taste, tactile acuity, the sensibility to pain, motor speed and accuracy, mental fatigue, estimations of time intervals, memory, etc. The results of this work have served to dispel many long-standing misconceptions regarding the sense acuity of savage peoples. The general conclusion derived from experiment is "that the visual acuity of savage and half-civilized peoples, though superior to that of the normal European, is not so in any marked degree."[23] Myers says: "The tales which have so frequently been told by travellers about the marvellous acuity of vision among primitive peoples unquestionably depend, not on a vastly superior visual acuity but on the power of interpreting signs which are meaningless to the European and hence escape his notice. For when the E-test . . . is applied to primitive folk, the results show a visual acuity which is not very different from, though perhaps on the whole slightly superior to, the acuity of Europeans living a corresponding out-of-door life. . . . Now and again individuals have been examined whose acuity exceeds four times the so-called normal, and it may be that such cases are somewhat commoner among primitive than among civilized peoples."[24]

The tests for color vision show certain important differences.[25] It was found that the order of sensitivity to different colors is different for the English and the Murray Islanders. Greater variation is noted among the English. Also the ordinary form of color-blindness, in which red and green are confused, does not exist or is very rare among the Murray Islanders,—a fact which holds true of many other primitive peoples.

In auditory acuity the results were different from what traditional accounts of the keen sense of hearing among savage peoples would lead us to expect. From the measurements made, "one is forced to conclude that the general auditory acuity of the islanders of the Torres Straits is inferior to that of Europeans."[26]

The comparative study of tactile acuity and sensitivity to pain show also important differences. "The figures indicate that in the skin areas tested the Murray Islanders have a threshold of tactile discrimination of which the value, in terms of distance of two points touched, is just about one half that of Englishmen, or we may say in other words, that their power of tactile discrimination is about

[23] W. H. R. Rivers, Report of the Cambridge Anthropological Expedition, Vol. II., p. 42.

[24] "Introduction to Experimental Psychology," p. 94.

[25] Reports of the Cambridge Anthropological Expedition, Vol. II., p. 70 et seq.

[26] *Ibid.*, p. 148.

double that of Englishmen."[27] On sensitivity to pain, the Report reads as follows: "Comparing Murray men with Englishmen, we see that while their average threshold of tactile discrimination is only about half as high, their average threshold for skin-pain (produced by pressure) is nearly double that of Englishmen; or expressing the difference in other words and more loosely, we may say of these Murray men that their sense of touch is twice as delicate as that of Englishmen, while their susceptibility to pain is hardly half as great."[28] Other experiments tend to corroborate these results.

There seems therefore to be reasonable experimental evidence that primitive peoples are superior to civilized peoples in tactile, and inferior to them in pain, sensitivity. Primitive man seems also to be superior in his capacity to discriminate lifted weights. Commenting on these facts Myers says: "There is no reason to suppose that primitive man has had more experience in discriminating touches and weights; quite the contrary is probably true. We must be content at present merely with stating the results without venturing on an explanation of them."[29]

Another important experimental study of several different racial groups was made by Professor R. S. Woodworth at the St. Louis Exposition in 1904. No published report of his work has appeared, but a summary of his results and conclusions were given in an address before the American Association for the Advancement of Science at its meeting at Boston in December, 1909. This address was published in *Science*, February, 1910, under the title of "Racial Differences in Mental Traits." The discussion is characterized throughout by valuable observations on both methods and results.

In tests on vision, Professor Woodworth found that the Indians and Filipinos took the highest rank, from 65 to 75 per cent. of them excelling the average of the whites. He says: "We may perhaps conclude that eyesight is a function which varies somewhat in efficiency with differences of race, though with much overlapping." The whites were found superior in hearing, which is regarded as probably due largely to the training and hygienic influence of civilized life. So far as tests have been made, they seem to indicate that the acuity of smell is about the same for all races.

He reports that experiments on the pain-sense of Indians, Filipinos, Africans and Ainu, made by himself and Dr. Bruner, are in accord with the results of McDougall and Myers. He shows, however, that some doubt attaches to these measurements. To test sen-

[27] *Ibid.*, p. 192.
[28] *Ibid.*, p. 195.
[29] "Introduction to Experimental Psychology," p. 102.

sitivity to pain a gradually increasing pressure is applied to the skin and the subject tested notes at just what point the sense of pain arises. Professor Woodworth thinks that the fact of incipient pain was likely judged differently by different peoples. He says: "Most whites, under the condition of the test, are satisfied with slight discomfort, while my impression in watching the Indians was that they were waiting to be really hurt. The racial difference would accordingly be one in the conception of pain or the understanding of the test, rather than in the pain sense."

Bearing on color vision, he says: "We were able to try on representatives of a number of races a difficult matching test . . . with the result that all other races were inferior to the whites in their general success at color matching." And on the speed of simple motor performances: "The familiar tapping-test, which measures the rate at which the brain can at will discharge a series of impulses to the same muscle, was tried on a wide variety of folk without disclosing marked differences between groups. The differences were somewhat greater when the movement, besides being rapid, had to be accurate in aim. The Eskimos excelled all others in this latter test, while the poorest record was made by the Patagonians and the Cocopa Indians. The Filipinos seemed undeniably superior to the whites in this test, though, of course, with plenty of overlapping." Righthandedness proved to be about the same for all races.

Professor Woodworth reaches the conclusion that "We are probably justified in inferring from the results cited that the sensory and motor processes, and the elementary brain activities, though differing in degree from one individual to another, are about the same from one race to another."

Of greater interest, however, are his efforts to measure the higher mental processes. He says: "A good test for intelligence would be much appreciated by the comparative psychologist, since in spite of equal standing in such rudimentary matters as the senses and bodily movement, attention, and the simpler sorts of judgment, it might still be that great differences in mental efficiency existed between different groups of men. Probably no single test could do justice to so complex a trait as intelligence. Two important features of intelligent action are quickness in seizing the key to a novel situation and firmness in limiting activity to the right direction, and suppressing acts which are obviously useless for the purpose in hand. A simple test which calls for these qualities is the so-called 'form test' . . . This test was tried on representatives of several different races, and considerable differences appeared. As between whites, Indians, Eskimos, Ainu, Filipinos and Singhalese, the average differences

were small, and much overlapping occurred. As between these groups, however, and the Igorot and Negrito from the Philippines and a few reputed Pygmies from the Congo, the average differences were great and the overlapping was small. Another rather similar test for intelligence, which was tried on some of these groups, gave them the same relative rank. The results of the test agreed closely with the general impressions left on the minds of the experimenters by considerable association with the people tested. And finally the relative size of the cranium, as indicated, roughly, by the product of its three external dimensions, agreed closely in these groups with their appearance of intelligence, and with their standing in the form test. If the results could be taken at their face value, they would indicate differences of intelligence between races, giving such groups as the Pygmy and Negrito a low station as compared with the most of mankind."

While Professor Woodworth inclines to the view that in sense acuity, motor activity, and the simpler mental process, the races are practically on the same footing, his tests, so far as they go, seem to indicate wider differences in general intelligence and the higher mental processes. They apparently separate the races into two general classes of ability, with small average differences and much overlapping between the various races of each class, but with large average differences and little overlapping between the races belonging to the two different classes. Now it is entirely probable, if tests could be sufficiently refined and graduated, that we should be able, by their use, to arrange all the races in a series of relative mental ability as indicated by the tests. If wide mental differences are found to exist between some races, we may all the more readily anticipate that at least small differences will be found to exist between others. On purely hypothetical grounds then, we would be led to believe in the possibility of arranging all the races in a series according to relative mental ability; and the facts, so far as they are known, tend to establish this hypothesis. The measurements of mental functions that have hitherto been made have tended to prove the existence of racial differences and not of racial identities. The differences that have already been obtained are greater than could reasonably be attributed to errors of accident or the crudeness of methods.

In accord with the foregoing facts and theories are the data that have been presented in this study. The two racial groups considered showed mental differences that were important and constant. In every subject of study the white group attained a higher average of scholarship. In every year of school work, the white group passed

in a much larger percentage of studies. The colored group is always more advanced in age than the white group of corresponding grade. The colored group require from a term to a year longer to complete the grammar school course than do the whites. All these important facts point in the direction of a difference in race psychology.

Now, if we admit that white pupils on the whole surpass colored pupils in school ability, we may well ask whether this is due to causes that are accidental, temporary and removable, or to causes that are fundamental and ineradicable In other words, is this difference a matter of opportunity, or of heredity. The answer may not be certainly known. But in as much as everything in the power of educator, philanthropist, and law giver has been done for the equalization of opportunity, it is hard to escape the conclusion that the fundamental explanation of the difference in scholastic standing is to be found mainly in the factor of race heredity. It is due to a real difference in the general mental equipment of the two races—a difference that has been brought about through physiological and mental evolution, and which can never be equalized by processes of education and training. We do not hesitate, however, to record the opinion that racial differences are in reality much smaller than traditional anthropology, as well as popular opinion, would lead us to believe. Between the white race and the colored race as found in the northern cities of the United States the overlapping is pronounced, and the difference between their average standing in mental work is not very great. Thomas Jefferson's observation that a negro "Could scarcely be found capable of tracing and comprehending the investigations of Euclid,"[30] is certainly incorrect, if applied to the group here studied. If the work of all the colored pupils in our high schools were distributed with that of the whites, it would give us a distribution practically the same as that of the whites alone. The curve of distribution would be unimodal and of the same general form, but the median mark would be somewhat lowered. The fact that the coeducation of the races is possible and practicable is in itself conclusive evidence that the distribution of abilities among the two races is very largely the same.

But another factor which may be of greater significance for the social progress and intellectual capabilities of a race than its average standing in any or all sorts of mental work is its intellectual variability. The capacity of a race for independent progress depends in a very large measure upon its capacity to produce in considerable numbers men of very high ability. It is the man of genius upon whom social progress has ever depended. Advancement in civiliza-

[30] "Notes on the State of Virginia," p. 179.

tion has always been a matter of discovery and invention by the few, and of assimilation and appropriation by the many. Now the greater the inherent variability of a race in mental qualities, the greater will be its chances of producing men of that order of ability ranked as genius. Hence it follows that the capabilities of a race are to be judged less by the average ability of its members than by the limits of its hereditary variation from this average, and the consequent number of its men of high ability.

Though very little is as yet definitely known about the variability of races, there is some evidence that the European white is more variable than the negro, and that civilized peoples are more variable than primitive peoples. Also, as between the sexes, that man is more variable than woman. If this may be assumed as a biological fact, it will afford something of a scientific explanation of the rareness of real genius both in the negro race and among the women of European nations. Dr. C. S. Myers, in discussing the subject of differences on racial and sexual variability, makes the following important observations: "A civilized community may not differ much from a primitive one in the mean or average of a given character, but the extreme deviations which it shows from that mean will be more numerous and more pronounced. . . .

"Similar features undoubtedly meet us in the study of sexual differences. The average results of various tests of mental ability applied to men and women, are not, on the whole, very different for the two sexes, but the men always show considerably greater individual variation than the women. . . .

"For aught we know to the contrary the essential functions of womanhood may be the determinants not only of their special sexual physical features but also of greater uniformity of mental character. So, too, the particular environment in which the color and physique of the negro have been evolved may have induced a still more uniform mediocrity of mental ability. . . . Certainly there is not an instance of first-class musical genius . . . among European women, despite centuries of opportunity. And so, too, there is not an instance of first-class genius in a pure-blooded American negro, despite the numbers of them who receive a university training in the United States."[31]

Discussing the subject of difference in sexual variability, Professor Thorndike says: "Such a difference does exist in the case of boys and girls, the latter being the less variable. . . . The difference is of much theoretical importance to general psychology but has little bearing on the work of education in the lower grades. It does

[31] "Papers on Inter-Racial Problems," pp. 76–77.

account for the fact that the most striking and extreme cases of any mental trait are much more often found in boys than in girls.''[32]

Also Dr. Hrdlicka, in an anthropological study of a large number of white and colored children of both sexes, says: ''In a general way it can be stated that the white children present more diversity, the negro children more uniformity, in all their normal physical characters. This becomes gradually more marked as the age of the children advances.''[33] Although this latter observation refers to physical traits only, we may readily assume that this same racial difference in variability may also extend to mental traits.

If, then, there are wider variations in intellectual endowments from the mean or average ability in some one race than in others, that race would naturally have an advantage in the way of producing men of high ability, and would therefore be more capable of making great social progress, and would moreover in this sense be a superior race. So far as the facts are known, this seems to be the case as applied to the negro and white races.

In our own study of the two groups of high school pupils, however, the fact of greater racial mental variability is not at all pronounced, though the whites were slightly more variable. The average deviation of the white group from their mean scholastic attainment was 7, while that of the colored group was 6.5. In other words the colored group was about 93 per cent. as variable as the white group.[34] It may be noted, however, that school life and activities may offer only a narrow field for testing the hereditary variability of groups; also that the colored group which we have studied is of mixed racial heredity, and is probably more variable on this account. The same sort of study of two groups of pure racial type would probably show a greater difference in variability.

From all the observations and measurements that have come under consideration we arrive at the conclusion that as regards the mental heredity of the negro and white races as represented in our Northern

[32] ''Notes on Child Study,'' p. 168.

[33] ''Anthropological Study of One Thousand White and Colored Children,'' p. 59.

[34] Probably, however, some allowance should be made for the fact that the average for the white group was higher than for the colored. If we adopt Pearson's coefficient of variation, and divide the average deviation of each group by the group average before comparing the variabilities of the two groups, we reach the conclusion that the colored group is 99 per cent. as variable as the white. If, however, we adopt Thorndike's suggestion that the proper allowance is obtained by dividing the average deviation by the *square root* of the group average, we then reach the result that the colored group is 96 per cent. as variable as the white.

States, the average mental ability of the white race, so far as this ability is exercised in school studies, is higher, but not a great deal higher, than that of the colored race; and that as regards the matter of mental variability, the white race is more variable, but not a great deal more variable, than is the negro race. But the importance of small differences in hereditary traits is not to be overlooked. In the struggle for supremacy or survival, these small differences may be, and no doubt often are, the determining factor. The matter of greater variability is of chief advantage to the race because of its furnishing a basis for a wider departure from the average offspring, and consequently for the production of a greater number of highly gifted individuals. It is by the production of these highly gifted individuals that social progress and racial supremacy are assured.

The foregoing conclusions seem clearly deducible from the data compiled and presented. They are also in accord, except in their moderation, with the teachings of history and anthropology, and with the views commonly accepted among those who have made extensive observations upon the races. There seem to be no statistical grounds for holding to the view of substantial racial mental equality. Our data point clearly to a measurable degree of mental difference. And this is believed to be the view that will be ultimately gained from a purely scientific study of the question, stripped, on the one hand, of philanthropic considerations, and, on the other, of racial bias.

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